WEB-BASED ACCOMMODATION FINDER FOR STUDENTS

Prepared by

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ABSTRACT

The Web-based Accommodation Finder For Students was developed for students of University Malaya to provide a more efficient way for them to search for accommodation outside campus area. Nowadays, students usually search for accommodation from advertisements through newspapers, at bus stops, bulletin boards, etc or through friends. Many problems arise by searching in this way. Therefore, this system helps to eliminate some of these problems by enabling students to search from one source - the Internet.

This system enables users to search for accommodation by location, number of rooms or rent price issued. Students may also obtain information on other organizations that offers accommodation services such as hostels. Other than that, landlords/accommodation occupants can advertise in order to find occupants.

This system was developed by using the waterfall model methodology. Review on current systems has assisted in understanding how the system should interact with users. This is important to achieve the project goal which is to provide a reliable, high-quality and efficient system to users.

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Chapter 1

Introduction

INTRODUCTION

1.1 Project Definition

Web-based accommodation finder for students is developed to produce a system that is systematic, effective and efficient to enable students to find accommodation for rent. 'Students' refer to only those who are studying in University Malaya. The development of this project is important to facilitate students in searching for accommodation which they find convenient easily and without much effort.

There are three types of accommodation available:

i) House

ii) Apartment

iii) Room

Finding accommodation inside campus area is not available in this system. Therefore, this system is used only to find accommodation outside of campus area. In a manual procedure, the accommodation finder would normally find accommodation through an agent or deal directly with the landlord. The accommodation finder will also attempt to search for advertisements on available accommodation and then contact the landlord.

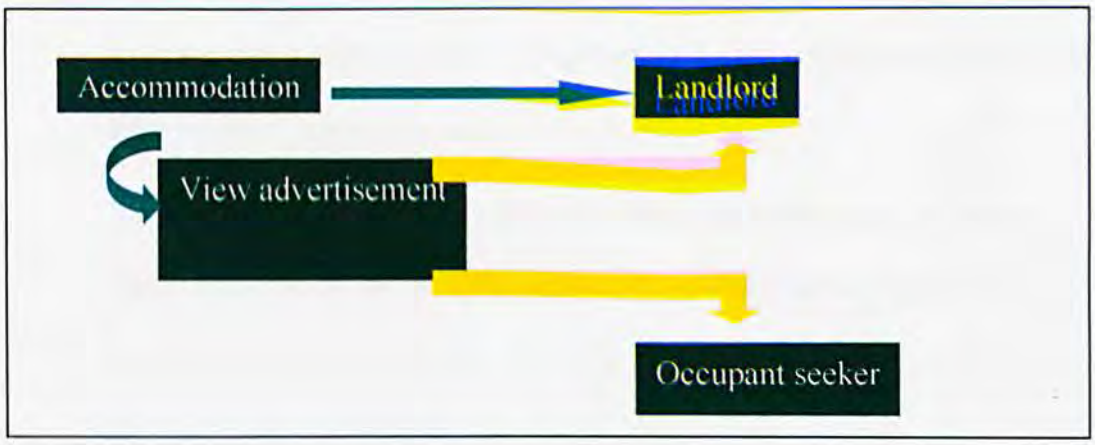


figure 1-1 Manual procedure

This is done when searching for houses or apartment for rent. However, when searching for rooms in houses or apartments, the person who will probably distribute the advertisement will be those who have already occupied that particular house or apartment and are searching for new housemates/roommates. For hostels, a management office situated in the hostel should handle matters regarding room renting.

1.1.1 Problem definition

- Advertisement in the newspaper is only available for 1 day. So, only those who are luckily enough to read that particular newspaper can see the advertisement.
- Advertisements placed at bus stops, lamp posts and etc, is not reliable. It could be an old ad and the viewer will not be able to know the status of the particular accommodation. By the time they contact the ad owner, the place could already be occupied.
- Accommodation finders might face problems when using an agency to track down tenants. Profit will only go to the agent because the cost will

increase when using an agent. Therefore, this will become a burden to the tenants when paying the rent.

- Accommodation finders might have a hard time contacting the person that is responsible for the advertisement especially when the person only gives his/her phone number.
- Searching for accommodation is not an easy task especially when students are not familiar with a certain area.

1.2 Project objective

- To enable users to view the accommodation site on-line.

  -Accommodation finders will be able to view pictures of the accommodation area or its location which may be downloaded by the advertisement owner. This will enable accommodation finders to make proper selections.
- Enable students to search for accommodations by location, number of rooms or rent price issued.
- Enable landlords and those who are looking for housemates or roommates to advertise in this web site.
- Enable students to contact the person in charge of the particular accommodation.

  -Details of the ad owner will be displayed including contact numbers, email addresses and home address (optional).

- A system that will interact with users in a user-friendly way.

  -Interfaces which are easy to understand and enable users to find information in an easy and convenient way.
- Updated information on accommodations whether it is still available, when it will be available or whether it is currently rented by other students.
- Users will also be able to obtain information about other organizations or groups which offers help in finding accommodation such as hostels.
- A system that can be reached by anyone using the Internet and does not need to be downloaded on the computer.

1.3 Project Scope

- This system is developed for users who consist of accommodation finders and accommodation owners/occupant finders.
- Access to the advertisement section is only authorized to registered University Malaya students.
- Accommodation owners/occupant finders can fill in a form to enable them to advertise. However, this advertisement will only be available for 2 weeks. After that period, it will be deleted.
- System security is established by the use of passwords for students to book a place and view advertisements; and for accommodation owners/occupant finder who wish to edit, delete or add

advertisements and to edit, delete and add personal particulars, they should do this by informing the administrator.

Accommodation finder section comprises the following modules:

- Register
- Authentication
- View advertisements
- View accommodation status
- Search for accommodation
- Help section

Administrator section comprises the following modules:

- List of accommodations/advertisements
- View Registered user profile
- View advertisement owner details
- Advertisement control
- Authentication
- Help section

Ad owner section comprises the following modules:

- Contact/accommodation details
- Advertise
- Help section

1.4 Target Users

1. Users who will only view accommodation places that are mostly occupied by students and other useful information and do not need to register. These users will have no access to the advertisement section and will not be allowed to search.
2. Students searching for accommodation and needs to register to in order to search. Personal particulars will be kept confidential. These users are allowed to view advertisements.
3. Those who would like to place an advertisement in the web site. A completed form is required although personal particulars will be kept confidential, only particulars needed will be displayed such as name, contact number or email address. This is to enable students to contact the person-in-charge for inquiries or after they have confirmed their decision. The accommodation details will be used as information to be displayed in the advertisement.

1.5 Project Schedule

In general, project schedule is outlined to represent the development process of a project by showing the start time of each activity and the time estimated for each activity to end. The duration for each activity is estimated and this will enable the developer to perform an activity on a timely basis.

These are the descriptions on the activities which are outlined in the project schedule:

1. **Project Definition** is the activity that is performed to review the overall project plan to define the reason for developing the project.
2. **Problem Analysis** is carried out to analyze problems faced in the existing system before the development of this system. From this activity, required information and data sources are gathered.
3. **System Requirements Analysis** recognizes the operating system, hardware and software needed for the development of the system.
4. **System Design** is the activity where each design phase is carried out accordingly such as designing the user interface, coding and such.
5. **Data conversion** is the activity of entering data to convert it to valuable information for system output.
6. **System Testing** enables testing and evaluation of the system for errors or problems that might arise before it is implemented. Users are also involved in this activity.
7. **Implementation** of the system after it is developed. At this point, users will be able to use the system and system will be supported and maintained to ensure its effectiveness and efficiency.

	Month									
Task	June	July	August	September	October	November	December	January	February	March
Project Definition										
Problem Analysis										
System Requirements Analysis										
Viva										
System Design										
Data Conversion										
System Testing										
Implementation										
Documentation										

Table 1-2 Project schedule for the development of 'Web based accommodation finder for students' system.

Chapter 2

Literature Review

LITERATURE REVIEW

2.1 Introduction

To develop a system, detailed research and system planning is needed to prevent errors and problems to occur when developing the system. This is to avoid further problems to occur in the later stages of the development. Therefore, to understand the system that will be developed, an intensive research was done on the web tools and technology used. Research was also done on current systems that perform similar functions as this system.

2.2 The Internet

The Internet evolved from the APRANET, which was developed in 1969 by the Advanced Research Projects Agency (APRA) of the U.S Department of Defense. It was the first operational packet-switched network. APRANET began operations in four locations: UCLA, University of Santa Barbara, the University of Utah and SRI (Stanford Research Institute).

For a decade since the existence of Internet, it has been widely known to be used for emails that allow for remote access of databases, online group conferencing, support and file sending. In the early 80's, all research on communication networking was changed to TCP/IP protocol and APRANET became the pioneer to the new Internet. This modifying process was completed at the end of 1993, where Internet was born.

In 1990, HTML (Hypertext Mark-up Language) which enables graphical information in the Internet, was introduced [Charles P.Pfleeger, 1997]. Every individual can create a graphic page where it becomes a part of a hypertext virtual network which is known as WWW (World Wide Web).

Different services were developed to enable information shared among many sites in the Internet because the Internet is research-oriented, where many services are hard to use and documentation is bad. Now the Internet is available for commercial purposes and individual sites, new services that are easy to use were developed and new interface makes it more user-friendly.

2.3 World Wide Web (WWW)

The World Wide Web (WWW), or the web, is a repository of information spread all over the world and linked together. The WWW has a unique combination of flexibility, portability and user-friendly features that distinguish it from other services provided by the Internet.

The WWW project was initiated by CERN (European Laboratory for Particle Physics) to create a system to handle distributed resources necessary for scientific research. The WWW today is a distributed client-server service, in which a client using a browser can access a service using a server. However, the service provided is distributed over many locations called web sites.

2.4 Client-server computing

Client/server describes the relationship between two computer programs in which one program, the client, makes a service request from another program, the server, which fulfills the request. Although the client/server idea can be used by programs within a single computer, it is a more important idea in a network. In a network, the client/server model provides a convenient way to interconnect programs that are distributed efficiently across different locations. Computer transactions using the client/server model are very common. For example, to check your bank account from your computer, a client program in your computer forwards your request to a server program at the bank. That program may in turn forward the request to its own client program that sends a request to a database server at another bank computer to retrieve your account balance. The balance is returned back to the bank data client, which in turn serves it back to the client in your personal computer, which displays the information for you.

The client/server model has become one of the central ideas of network computing. Most business applications being written today use the client/server model. So does the Internet's main program, TCP/IP. In marketing, the term has been used to distinguish distributed computing by smaller dispersed computers from the "monolithic" centralized computing of mainframe computers. But this distinction has largely disappeared as mainframes and their applications have also turned to the client/server model and become part of network computing.

In the usual client/server model, one server, sometimes called a daemon, is activated and awaits client requests. Typically, multiple client programs share the services of a

common server program. Both client programs and server programs are often part of a larger program or application. Relative to the Internet, your Web browser is a client program that requests services (the sending of Web pages or files) from a Web server (which technically is called a Hypertext Transport Protocol or HTTP server) in another computer somewhere on the Internet. Similarly, your computer with TCP/IP installed allows you to make client requests for files from File Transfer Protocol (FTP) servers in other computers on the Internet.

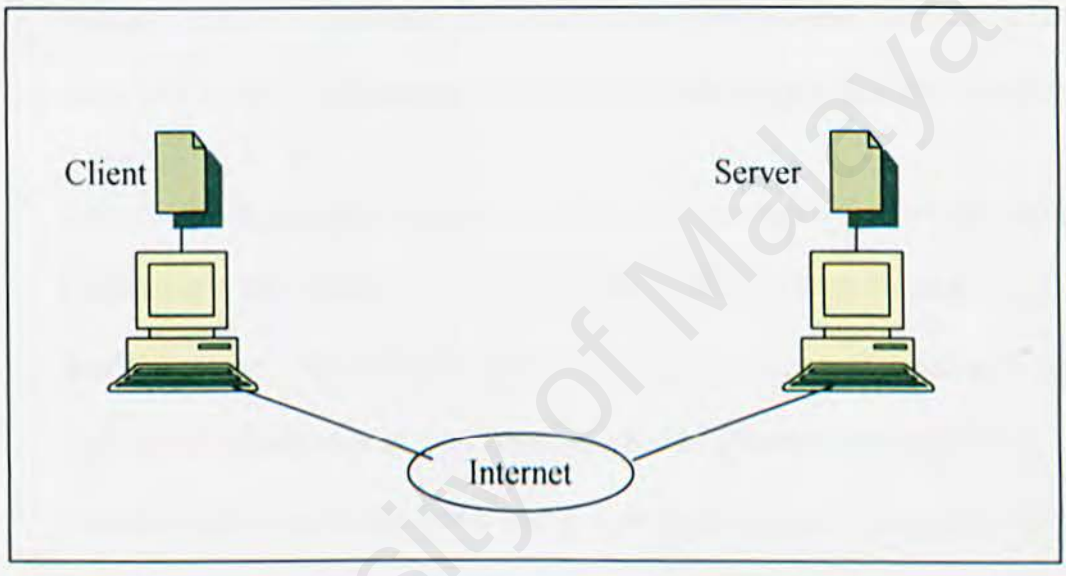


figure 2-1 Client-server model

Other program relationship models included *master/slave*, with one program being in charge of all other programs, and peer-to-peer, with either of two programs able to initiate a transaction.

2.5 Web Server

2.5.1 Microsoft Internet Information Server (IIS)

Microsoft IIS is the core Windows Me services that provides Internet services. It is also the underpinning that provides information-publishing capabilities in the Internet. IIS comes bundled (free) with Microsoft Windows Me operating system. IIS serves equally well as an Internet web server or a public web server program. IIS uses Windows Me's User Manager to maintain users and groups, saving the trouble of maintaining multiple sets of network and web site users.

IIS includes an integrated search engine that allows users to create custom search forms with a variety of tools, including ASP, Active X Data Objects and SQL database queries. The IIS web server software also includes Microsoft Front Page HTML development tool. IIS supports File Transfer Protocol (FTP), allowing users to download files and data from the IIS server site with the FTP protocol.

IIS also provides additional levels of security and a built-in certificate server that allows organizations to issue and manage digital certificates verifying identities. Access control can limit use by groups or individuals and can be applied to directories and files. Part of documents can be hidden from users who do not have clearance to access them.

2.6 Web Application Programming Technology

2.6.1 Active Server Pages (ASP)

ASP is web server technology form Microsoft that allows for the creation of dynamic, interactive sessions with the user. An Asp is a web page that contains HTML and embedded programming code written in VBScript or Jscript. It was introduced with version 3.0 of Microsoft Internet Information Server (IIS). When IIS encounters an ASP page requested by the browser, it executes the embedded program. ASP's are Microsoft alternative to CGI scripts and Java Server Pages, which allows web pages to interact with databases and other programs. Third party products add ASP capability to non-Microsoft web servers. The ASP technology is an ISAPI program and ASP documents use an .ASP extension.

ASP is based on the Active X scripting engine and enable developers to include server side executable script directly into a HTML document. Developers can create ASP using any of the popular scripting languages, including VBScript, JavaScript, Perl and so on.

2.6.2 Microsoft Front Page 2000

Users can simply create a web page using Microsoft Front Page 2000. Users can set preferences on how they want the code to appear-nested or flat text, uppercase or lowercase on tags and parameters. In the past, users could only count on support for the latest versions of Internet Explorer, but now they can

design for Netscape-specific features and maintain pages compatible with older browsers.

Among Front Page's strongest points are it's collaborative capabilities pages on a file or web server can be checked in or out, leaving notes about who has done what work to individual pages, and what remains to be done. Users can easily incorporate several features normally requiring CGI-bin access or Perl programming, such as discussion groups, web contents or search forms. To use these features, the server that hosts user's web site must provide support for FrontPage extensions, which is becoming increasingly common among commercial hosts.

2.6.3 Macromedia Dreamweaver MX

Macromedia MX is an integrated family of tool, server, and client technologies for building Rich Internet Applications that can be delivered across major platforms and devices. Macromedia MX enables the creation of a new generation of Internet solutions that extend existing infrastructure and standards to offer a significantly more effective user experience at a lower cost.

Products in the Macromedia Dreamweaver MX family offer designers and application developers' powerful new functionality to create effective user experiences across the spectrum of Internet solutions—from plain HTML websites to full Internet applications. Together, the Macromedia MX products provide the first complete family of tool, server, and client technologies for building a new generation of Internet solutions: Rich Internet Applications.

2.6.4 Microsoft InterDev 6.0

Visual InterDev (VI) is a project management software for high end web development. Visual InterDev comes as part of Microsoft's suite of professional programming tools known as Visual studio. It integrates many of the existing tools for designing web application and provides 2 ways for developers to edit HTML. One way is through a special version of Microsoft Front Page for WYSIWYG editing and the second is by providing a nice color code text editor.

Microsoft knows that no matter how efficient Front Page editor was, programmers would still insist on being able to set the HTML codes directly. So they took pains to include a text base source editor that allows users to click on the tabs easily and switch between WYSIWYG and text views.

Visual InterDev 6.0 is the tool that Microsoft is promoting as their favorite ASP editing tool. The text-based editor is a really useful feature of Visual InterDev 6.0. This is because it is color-coded and helps format programming blocks by automatically indenting text to the level of the line above it. Best of all, all the text editor includes context-sensitive help for HTML text and script commands. This useful feature will help tremendously especially in debugging of codes.

Visual InterDev is for programmers, but it is designed so that graphical designers, writers, editors and programmers should all be able to work together using their own tools on the same project. Visual InterDev is a major piece of software, both in the number of things it does and the amount of external things it tries to pull together. The result is a powerful but undoubtly one of the most

complex and difficult editors to master. But having said that, it is undoubtly the most powerful editors as it offers many tools and features to the developer.

2.7 Web Application Development Language

2.7.1 Hypertext Markup Language (HTML)

The HTML is the language used to define the content of web pages. In its basic structure, HTML is quite simple, consisting of tags that precede or bracket various types of information [WILL98]. It is a non-proprietary format based upon Standard Generalized Markup Language (SGML) and can be created and processed by a wide range of tools, which are simple plain text editors to sophisticated WYSIWYG (what you see is what you get) authoring tools. HTML files are different form other text files because they include a special code called HTML tags. The HTML tags are surrounded by two angle bracket characters (< and >).

HTML allows physical styles from the content markup by relying more on style sheets. FRAME element is now formally defined somewhere other than Netscape or Microsoft OBJECT element is introduced to address the computing interest between applets, plug-ins and Active X controls. The following are the advancements of HTML:

- HTML markup is separated from style through the introduction of style sheets.
- Added flexibility with forms and tables.
- Formal adoption of tags that are crucial to DHTML.
- Incorporation of scripting language capabilities.
- Ability to respond to or ignore specific media types.
- Improved sensitivity to different language types.
- Greater accessibility for those who use audio or Braille interfaces to access web data
- End users may choose between styles for viewing a document or turn off style sheets altogether.

2.7.2 Scripting language

A scripting language is a special type of programming language used to provide control in another host environment. It is interpreted rather than compiled. Therefore, a program built with a scripting language's interpreter and cannot be run as a stand-alone application.

2.7.2.1 VBScript

VB Scripting Edition (VBScript) was introduced by Microsoft to allow web page developers to make use of their existing VB skills. When creating client side script, VBScript inherits its syntax and structure from VB programming language. VBScript is an alternative to JavaScript in the client side scripting

language. However, only Microsoft Internet Explorer supports this language. Netscape Navigator user's need a Netscape plug-in called Script Active. It can be used to validate from data, displaying status bar messages, Active X controls and working with cookies.

VBScript is closely related to the BASIC programming. It is a scripting language that is easier to use. It can act as a client side and server side programming just like JavaScript. VBScript can be used as the server side programming which means the language is executed on the server that serves a web site's files rather than on the browser that receives those files. The scripts are processed before the pages are sent out across the Internet to the browser.

2.7.2.2 JavaScript

JavaScript is a cross-platform scripting language which is simple, interpreted and object-oriented. It is used to add simple interactive behaviors to a HTML page by means of a script of keywords inserted into a web page. It originated from Live Script that was developed by Netscape to provide a way to interface with Java. The developer of Java helped Netscape to rework Live Script and produce JavaScript. JavaScript is full featured and allows for the creation of dynamic pages; interactive content, forms input checking and much more.

JavaScript's syntax is based on Java's syntax, but otherwise remains as a different language with a different role. JavaScript excels in its ability to add

client-side processing of forms, create HTML content on the fly and tightly integrate HTML with Java. JavaScript requires only text editor for the creation of applications and because Netscape's Navigator has a built in JavaScript interpreter, JavaScript applications may be run immediately after they have been typed in simply by loading them into the browser window.

2.8 Web Browser

A web browser is a software program that knows how to contact a web server (using Hypertext Transfer Protocol (HTTP)), requesting a document from that web server and displaying that document returned by the server to the client. There are many different types of browsers; the most popular ones are Netscape Navigator and Microsoft Internet Explorer. The appearance of the document varies from browser to browser depending on the capability of each browser, system and preference.

2.8.1 Microsoft Internet Explorer

Microsoft web browser, also known as "IE". Versions for Windows Me, Mac and UNIX are available. IE was developed after Netscape began to turn the computer world upside down with its Navigator browser and both companies went head to head on enhancements and features. Although Netscape's browser was a purchased product, Microsoft made IE free, forcing Netscape to do the same. Since Microsoft integrated the browser into Window 98, IE has become the market leader. IE has also been the browser in AOL's online software.

2.8.2 Netscape Navigator

Netscape Navigator is a web browser for Windows, Macintosh and X Windows from Netscape that provides secure transmission over the Internet. Soon after its introduction in 1994, Navigator, or just "Netscape", as it is commonly called, quickly became the leading web browser on the web. Initially a purchased product, Netscape was forced to give it away after Microsoft developed Internet Explorer and offered it free of charge. The Navigator web browser is part of Netscape's communicator package which includes a variety of additional internet utilities.

2.9 Database management system

2.9.1 Microsoft Access 2000

Since its first introduction in 1992, Microsoft® Access has become a leader in the desktop database category among a wide variety of users. Today, the popularity of Access has soared to include not only experienced database users, but also first-time database users. With Access 2000, newer users will appreciate the strong integration with Office applications and the familiar look that makes it easy to get up and running quickly. Access power users and developers will find new and exciting ways to take advantage of Access' popularity among end users by increasing the scalability of Access 2000 with stronger integration to enterprise level databases. Whether users are creating a database to manage

contacts and customers or creating a tracking system for inventory, Access provides an easy way for all levels of desktop users to find, manage and share data.

2.9.2 Microsoft SQL Server 7.0

Microsoft SQL server is the database management system that is developed by Microsoft Corporation. It is a client/server relationship system (RDBMS). By using Microsoft SQL server, modern applications can be developed by separating the client application and the database services. SQL server transact – SQL supports the ANSI SQL – 92 standard and provides extension to the SQL language (Jeff Madden, 1999).

Microsoft SQL server supports a set of features that results in the following benefits:

- Ease of installation/deployment and use
- Microsoft SQL server includes a set of administrative and development tools that improve the ability to install, manage and use the Microsoft SQL server across several sites.
- Scalability
- The same database engine can be used across platforms ranging from laptop computers to large, multiprocessor servers.
- Data warehousing
- Microsoft SQL server includes tools for extracting and analyzing summary data for online analytical processing (OLAD). Microsoft SQL

server also includes tools for visually designing databases and analyzing data with other server softwares.

- System integrations with other server software
- SQL server integrates with e-mail, the Internet and windows.

SQL server 7.0 Enterprise edition builds on the established strengths and broad functionality of SQL server, extending its already extensive scalability, interoperability, availability and manageability. Enterprise Edition provides the means for building and displaying large-scale distributed applications, making it the best platform for the largest and most mission-crucial support and can expand to use to 3GB of memory.

The Microsoft SQL server is so popular that the International Database Corporation (IDC) estimates that SQL server has captured 44% of all database shipments, compared to 28% fro the second-place oracle. IDC's latest figure also shows SQL server License sales growing at more than 100% annually.

2.10 Review on current systems

2.10.1 http://www.travelaccommodationuk.com/

This system enables users who are traveling throughout UK to search for accommodation such as hotels, guest houses and B&B's (Bed and Breakfast houses) while traveling. Information about accommodation is displayed according to the name of the town the user wishes to stay. This system also enables users to book hotels on-line for hotels which have on-line booking facilities. This enables users to get a reply straight away (real-time) and to know whether they are on line or whether the hotels have rooms available rooms or not.

Advantages

- Enables users to book hotels on-line for hotels which have on-line booking facilities.

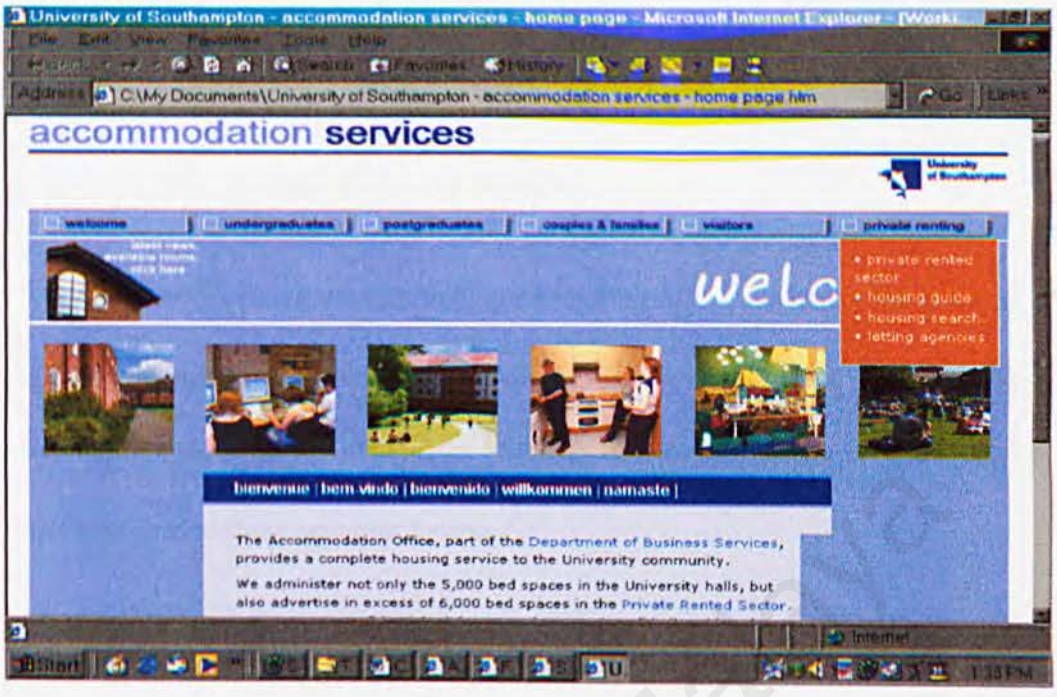
- Enables users to get a reply straight away (real-time) and to know whether they are on line or whether the hotels have available rooms or not.
- Provides services for users who would like to advertise.

Disadvantage

- This system is only useful for users who plan to stay at a particular place for a short while during traveling and not for those who would like to stay over a long period.

This system also provides services for users who would like to advertise. This system would be useful for accommodation-seekers who are traveling throughout the UK. All they have to do is click on the area in the map shown in the main page and then click on the name of the town in that particular area they intend to stay and information on all accommodations available in that particular town will be displayed. This system also provides other services such as car rental, car hire and information on rails, coaches, currency converter, weather, time zones and airport parking.

2.10.2http://www.accommodation.soton.ac.uk/



The University of Southampton offers accommodation services for the University Community. Among those who can use this system are undergraduates, postgraduates, couples & families and visitors.

Accommodation's that are available consist of rooms in the University Halls and in the private rented sector.

Advantages

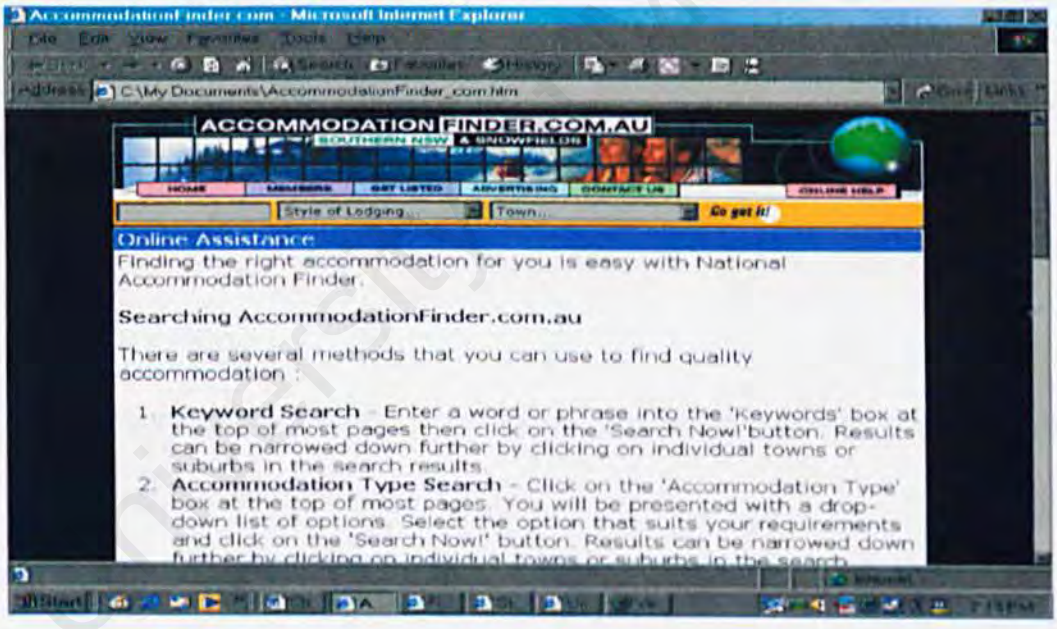
- Users can view residence fees, hall location maps and latest news on available accommodation.
- Information on letting agencies, housing guides and housing search can also be found in this website.
- Information on how to apply for an accommodation is also available.

Disadvantages

- User's still have to proceed manually in obtaining the accommodation place as online reservation is not available.
- Accommodation is only for in-campus area.

Users just have to click on the category they belong to; undergraduates, postgraduates, couples, families, visitors or click on the private renting and they will be presented with a drop-down list with more information such as maps, fees, accommodation and much more.

2.10.3 http://www.accommodationfinder.com.au/



This system displays information on accommodations available in Australia. In this system users can use four types of methods to search for accommodation. After running a search, users will be presented with a list of results that match

their search parameters. To view an establishment in detail, simply click on the establishment's name in the search result list.

Advantages

- In this system users can use four types of methods to search for accommodation: Keyword search, Accommodation Type search, Town or suburb and combination of any of these methods.
- By clicking on icons which will be displayed alongside some establishments in the search result, users can make an online booking, visit the establishment's external web site, send e-mail to the establishment or read a review.
- The online booking system enables users to complete a simple, web-based form that, when submitted, is sent to the establishment in question.
- Infocart is one of the many special features that allow users to submit requests for detailed information to multiple establishments with just a few clicks and filling out a form.
- Another feature in this system is the referral system that allows users to refer an establishment to their friends.

Disadvantage

- Finding rooms to occupy is not available in this system.

2.11 Summary

This chapter on literature review has outlined some of the possible tools that can be used in developing the Web-based Accommodation Finder For Students system. The Internet is where users will be able to view the web site, Microsoft Internet Information Services (IIS) provides services to enable the system to run when using Active Server Pages (ASP) in program design, Microsoft Front Page, Macromedia Dreamweaver and Microsoft Visual InterDev is the software that enables development of web pages, Scripting languages such as VBScript and JavaScript are programming languages used to provide control in another host environment and Microsoft Internet Explorer and Netscape Navigator are web browsers in the Internet.

Study on current systems about accommodation finding that has already exist in the Internet was also carried out. Some of these systems have similar features such as on-line booking facilities and advertising services. Some systems have special features such as location maps displayed, viewing detailed information on an establishment and updated accommodation information. This study will be useful to develop a system that has good features to facilitate users in search of accommodation places. A system that is efficient and reliable would be the requirements of a user. Therefore, study on current systems would prove to be very useful for a system developer.

Chapter 3

Methodology

METHODOLOGY

3.1 Introduction

This chapter will describe the methodology used for the system development process. Three software development processes that will be considered are the modified version of the waterfall model, waterfall model with prototype and throwaway prototype model. Every system development process model includes system requirements as input and a delivered product as output.

These are some of the reasons for modeling a process:

- To form a common understanding of the activities, resources and constraints involved in a system development.
- Helps to find inconsistencies, redundancies and omissions in the process and its constituent parts. As these problems are noted and corrected, the process becomes more effective and focused on building the final product.
- The model reflects the goals of development, such as building high-quality system, finding faults early in development and meeting required budget and schedule constraints.
- Every process should be tailored for the special situation in which it will be used. Building a process model helps to understand where that tailoring is to occur.

3.2 Waterfall model

The waterfall model was one of the first models to be proposed, where the stages are depicted as cascading from one to another [Royce,1970]. A modified version of the model has been introduced [P.Selappan, 2000]. One development stage should be completed before the next begins. Thus, when all of the requirements are elicited from the user, analyzed for completeness and consistency, then the development can go on to the next activity.

In the modified version, this model recognizes the importance of backtracking (feedback) and iteration in the software process. From each stage, the system developer can go back to the previous stages should there be any errors. It is obvious that errors detected late are the most expensive to correct. Therefore, each stage should be properly verified and validated (against user requirements) to avoid expensive iterations.

Advantages:

- Milestones are easy to identify.
- Presents a very high-level view of what goes on during development and it suggests to developers the sequence of events they should expect to encounter.
- It is easy to separate one stage from another.

Disadvantages:

- It implies that any stage should be frozen before continuing with the later stages.
- It assumes that user requirements can be precisely specified.

Unfortunately, users rarely know precisely what they want, and software engineers rarely understand the business context of their customers.

- It is still unrealistic. In many projects, strict sequencing of phases is not actually obeyed.

3.3 Waterfall model with prototype

This system development process is similar to the typical waterfall model except it includes activities and subprocesses that enhance understanding of the model. Prototyping is such a subprocess; a prototype is a partially developed product that enables users and developers to examine some aspect of the proposed system and decide if it is suitable or appropriate for the finished product.

Often, the user interface is built and tested as a prototype, so the users understand what the new system will be like, and designers get a better sense of how the users like to interact with the system. Three other processes occur in the model life cycle; validation ensures that each system function can be traced back to a particular requirement in the specification; system testing also verifies the requirements; verification ensures that each function works correctly.

Advantages:

- Design prototyping helps developers assess alternative design strategies and decide which is best for a particular project.
- Major problems in the requirements are addressed and fixed well before the requirements are officially validated during system testing.
- Validation makes sure that the developer is building the right product according to the specification.
- Verification checks the quality of the implementation.

Disadvantages

- Similar to the waterfall model, it also implies that any stage should be frozen before continuing to the later stages.
- After completing one stage, backtracking cannot be done if errors occur when testing the system; therefore, the process has to be repeated from the early stage.
- Like the waterfall model, strict sequencing is rarely obeyed.

3.4 Prototyping model

The prototyping model allows all or part of a system to be constructed quickly to understand or clarify issues. Requirements or design require repeated investigation to ensure that the developer and user have a common understanding both of what is needed

and what is proposed. One or more of the loops for prototyping requirements, design or the system may be eliminated, depending on the goals of the prototyping.

Prototyping begins with requirements gathering. The system developer and user meet and define the overall objectives for the system, identify whatever requirements are known and outline areas where further definition id mandatory. A quick design then occurs. The quick design focuses on representation of those aspects of the system that will be visible to the user.

Advantages:

- This model can reduce failure risk and uncertainty in a system development.
- Helps developers to understand the problem definition before designing the system.
- The developers and users will have a common understanding of the system built.

Disadvantages:

- Developers will be too eager to finish the system without concern for the actual quality the system.
- Unsuitable operating system or programs may be used to produce fast outputs.

3.5 Proposed methodology

After considering all the three models mentioned- Waterfall model, Waterfall model with prototype and Prototyping model, the proposed model is the waterfall model. Figure 3-1 shows the waterfall model with the activities.

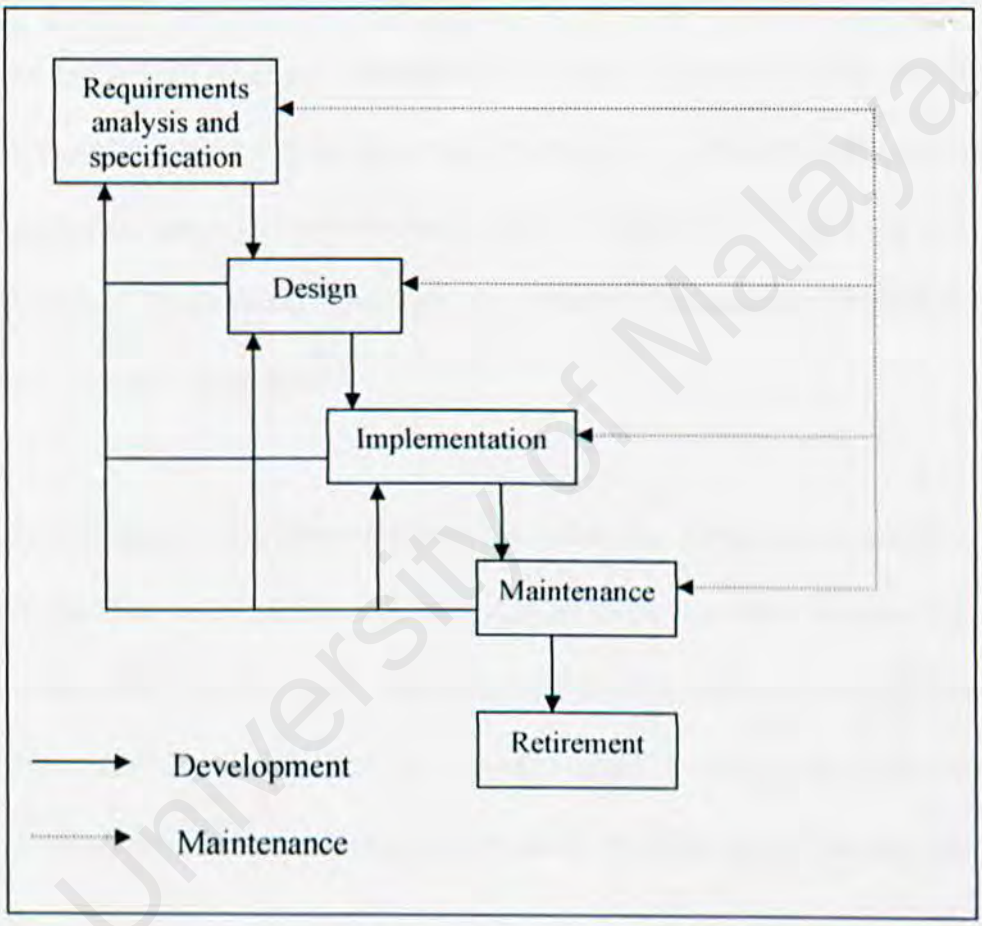


figure 3-1 Waterfall model

In the modified version of the waterfall model with prototype, the basic method is still used; completing one stage before moving on to the other. However, in this model, system developers can go back to the previous stages should there be any errors. These

errors could arise in the implementation stage which would point to either programming error or design errors. They could also arise in the specification stage where the developer could possibly misunderstood user requirements. In whatever stage that an error is detected, this model enables the developer to return back to the previous stages to examine the cause of the error.

In this system, prototyping may become confusing as user requirements may change from time to time. Repeating the activities in the prototyping model may become tiresome and costly. After the prototype is built, there is a possibility that it could just be thrown away before developing the actual system. This is because during development of the prototype, poor quality tools may be used in order for the system to be built in a short period or the operating system and programs are not suitable. Therefore, the prototype may just go to waste.

The waterfall model with prototype does not enable the developer to backtrack if errors occur in the later stages. This could be a problem to the developer because the whole process has to be repeated again should any errors occur. Since the activities in a waterfall model is done sequently, this should prepare the developer to expect what the next activity should be carried out and plan earlier on what should the next activity require

3.6 Summary

Each proposed model of the system development process includes activities aimed at capturing requirements; understanding what the users expect the system to do. Among the three methodologies mentioned, the waterfall model was chosen as the proposed methodology because of its advantages compared to the waterfall model with prototype and the prototyping model. The waterfall model seems to be the most popular model used compared to other system development models. This may be because it is proven that one stage can be separated from the other. This is important for system developers to clearly understand every activity carried out in the system development and every activity may be completed in an orderly fashion.

Chapter 4

System Analysis

SYSTEM ANALYSIS

4.1 Introduction

System analysis is performed to recognize the techniques and methods used for collecting data that is required for developing the system. From these techniques and methods that have been carried out, the functional and non-functional requirements for the system will be obtained. In the analysis of this system, four types of analyzing techniques were used to obtain information on system requirements:

a) Questionnaires

b) Interviews

c) Surfing the Internet

d) Review on current system

These techniques are important to determine what the user would require the system to do. These requirements will form the basis of the functions in the system.

4.2 Data collection techniques

4.2.1 Questionnaires

Questionnaires are one of the most useful way in obtaining information on what the users will require the system to do and analyzing the many factors that may affect the user requirements for the system. 50 questionnaires were distributed to students of University Malaya.

The information that has been obtained is listed below.

- Students who find the Internet as a useful source to search for accommodation.
- Important features that are taken into account when searching for accommodation.
- Rent price preferred for house.
- Rent price preferred for room
- Means of transportation preferable to/from campus.
- Students who prefer living in areas with large population or not.
- Students who prefer living inside or outside campus.

4.2.2 Interviews

Interviews are a useful way to elicit requirements from users. Five interviews were conducted; 4 students who are seeking for accommodation or occupants and a landlord who is searching for occupants.

4.2.2.1 Interviews with students

Interviews were conducted in an informal way. Among the questions asked were:

- How do they usually search from accommodation?
- Would they be interested to search for accommodation through the Internet?
- Would they prefer to advertise in a practical way- distributing advertisements by-hand or through the Internet?

4.2.2.2 Interviews with landlords

Interviews were conducted in an informal way with a landlord who usually rent out accommodation to students. Among the questions asked were:

- How does he usually find occupants?
- Does he prefer renting out to students or non-students?
- Has he ever tried to advertise through the Internet?
- Would they be willing to pay to advertise in the Internet?

4.2.3 Surfing the Internet

The Internet has been widely proven as a useful facility to search for information through the help of search engines. During the development of the Web-based Accommodation Finder for students system the Internet has been used to find other information that may prove useful in building the system.

These are some of the information obtained from the Internet:

- Other systems that provides search functions
- Accommodation places throughout the world
- Techniques and methods to find information on accommodation
- Techniques used to find for accommodation
- Types of accommodation – hotels, Bed & Breakfast houses, rooms, house, apartments.

These information's are important to gain more information about accommodation and how other accommodation finding system functions.

4.2.4 Review on current systems

Review of current systems has already been discussed previously in Chapter 2: Literature Review where three currents systems that perform similar functions as the Web-based Accommodation finder for students system was reviewed. Review on current systems explained the nature of the system that has been mentioned and the advantages and the disadvantages of each system from the developer's point of view.

The information obtained from this review are important to understand how the system should interact with users and problems associated with the current systems.

4.3 System Requirements

System requirements are divided into 2 parts; Functional requirements and Non-functional requirements. The functional requirements explain what the system will do, and the non-functional requirements constrain the behavior in terms of safety, reliability, budget, schedule and more [Pfleeger, 2001].

4.3.1 Functional requirements

Accommodation finder:

- Registration

- Students who would like to search for accommodation by viewing advertisements or search through location, number of rooms or rent price will have to fill in a registration form and submitting it with their password.

- Authentication

- Registered students have to login before they can search for accommodation and logout after searching. Students may also change their password for security.

- Search

- This section has two parts- search for rooms or search for house/apartment. Registered users may search through location, number of rooms or rent price issued. Users will be shown the list of accommodations that match their search criteria.

- Accommodation Status

- Through advertisements, registered users can view the accommodation status to know whether it is currently occupied, if it is how many are occupying and when will it be available for renting.

- View advertisements

- Registered users searching for accommodation can view details of the accommodation and contact details of the landlord/accommodation occupant through advertisements.

- Help section

- Users may submit questions to the system administrator or view the most frequently questions with the answers. They may also report any problems that occur.

Ad Owner:

- Contact/accommodation details

- Ad owners may submit their contact/accommodation details and edit or delete the details.

- Advertise

- Ad owner may preview the advertisement generated from the submitted details. They also have an option whether to insert picture(s) of the accommodation. They may also cancel the advertisement and request to delete the advertisement.

- Help section

- In this section, ad owners may contact the system administrator to request or report any problems.

Administrator:

- Authentication

- Only the administrator is authorized to access this system. He/she may change passwords whenever they wish to. They may also view users' authentication.

- List of accommodation/advertisements

- Administrator can add, delete or update list of accommodations/ advertisements.

- View Registered users profile

- This may enable the administrator to verify the details of users and to inform them should any changes occur such as expired registration after 6 months or update of system functions. They may delete users from the system after the expired registration.

- View advertisement owner details

- This is to enable the administrator to verify the information submitted and inform them when the details submitted would expire. These details can be edited or deleted by the administrator when requested by the submitter.

- Advertisement control

- Administrator can check for errors in the advertisement and that it is reliable and data redundancy does not occur. They may also delete advertisements after it has expired (in two weeks).

- Help section

- This section assists the administrator in using an application or when errors occur through system documentation.

4.3.2 Nonfunctional requirements

(a) Usability

- The system will provide high level of usability to users through its communicativeness and operability such as easy-to-understand user interface, user menu and prompt responses.

(b) Learnability

- Users will be proficient in using the system and it should be easy for visitors to understand the site so that optimum utilization of the site can be achieved.

(c) Correctness

- The system should provide consistent and complete information to the user at all times.

(d) Speed

- Transactions should be successfully completed within 30 seconds or produce a response within that period of time. A proper balance in the load between the server and the client should be done to avoid unnecessary interaction which will increase response time.

(e) Interoperability

- This system should be able to interact successfully with other available systems. It should be able to work hand-in-hand and complement existing systems on common tools, technologies and web languages. Interoperability problems are aimed to be kept at its minimum.

(f) Reliability

- The system should set out an acceptable failure rate which means that the system should be recoverable within 24-hour time span.

(g) Efficiency

- The system's function should be able to execute efficiently in a timely manner and store data efficiently.

(h) Robustness

-Robustness refers to the ability of the system to continue operating despite facing unexpected problems. This system should be able to precede unanticipated errors by having validation for the input field on the client side before it is sent to the server. Similarly, validation must also be performed on the server side so that systematic errors do not occur.

4.4 System development tools

4.4.1 Software requirements

Operating System: Microsoft Windows Me

- Web Technology: Active Server Pages 3.0
- Web server: Internet Information Server 4
- Web application language: Hypertext Markup Language (HTML)
- Database management system: Microsoft SQL server 7.0
- Web development tools: Microsoft Front page 2000
- Server side Scripting: VBScript
- Client side Scripting: JavaScript
- Preferred Web browser: Microsoft Internet Explorer 5.5

4.4.2 Hardware requirements

Compile Processor: 866 MHz

- Hard disk space: 19.0 GB
- Drive: CD-ROM drive
- Memory: 64 MB RAM
- Display: VGA, Super VGA or higher.
- Peripherals: Mouse, keyboard or compatible pointing devices.

4.5 Runtime Requirement

4.5.1 Server Hardware Requirements:

- A server with Pentium at least 166 MHz Processor
- At least 32 MB RAM
- Network Interface card and hardware connection with recommended bandwidth at 10 Mbps or more.
- Other standard computer peripherals

4.5.2 Server software requirements:

- Networking Operating system – Windows 98 or higher
- Web server service – Microsoft Internet Information Server
- Server script Engine – Active Server Pages(ASP)
- Database connectivity Interface driver – Active Data Objects (ADO)
- Precondition for ASP installation – Microsoft Internet Explorer 5.0

- Database – Microsoft SQL server 7.0

4.5.3 Client Hardware requirements

- 16 MB RAM (minimum)
- Network connection through existing network configuration or modem (recommended at least 14.4 kbps).

4.5.4 Client server requirements

-depends on the browser used by the users – requires a system that can run Microsoft Internet 4.0 and above or Netscape Communicator (supports Java Applets and frames).

4.6 Summary

This chapter has introduced the various techniques used to gather required data to produce the functional and non-functional requirements of the system. The techniques used to elicit user requirements were distribution of questionnaires, interviews, Internet surfing and review on current systems. The requirements obtained will form the features of the system or describe functions the system is capable of doing in order to fulfill the system.

The functional requirements will form the basic functions of the system for the users to interact with while the non-functional requirements will ensure the quality of the system

by putting restrictions on the system. Restrictions also include design constraints which are the software and hardware requirements. These constraints are especially important to design the system and ensure that all functions will execute correctly. Other than that, the running requirements for the system has also been mentioned for both client and server side.

Chapter 5

System Design

SYSTEM DESIGN

5.1 Introduction

System design describes all the design processes involved in developing the Web-based Accommodation Finder system. These processes will be described in the system architecture design, process design and user interface design. System design enhances the understanding of the developer in building the system, thus reducing the risks that might occur in the implementation stage.

5.2 System architecture design

The client server web application is divided into 3 different tiers. The first tier is the user interface layer which is used for retrieving input and presenting data. The main component in this tier is the Internet Browser.

The second tier is the application layer or service tier which links the first and the third tier together. This is where the web-server resides.

The third tier is the data repository which consists of a database server and data store. This is where the application stores all records.

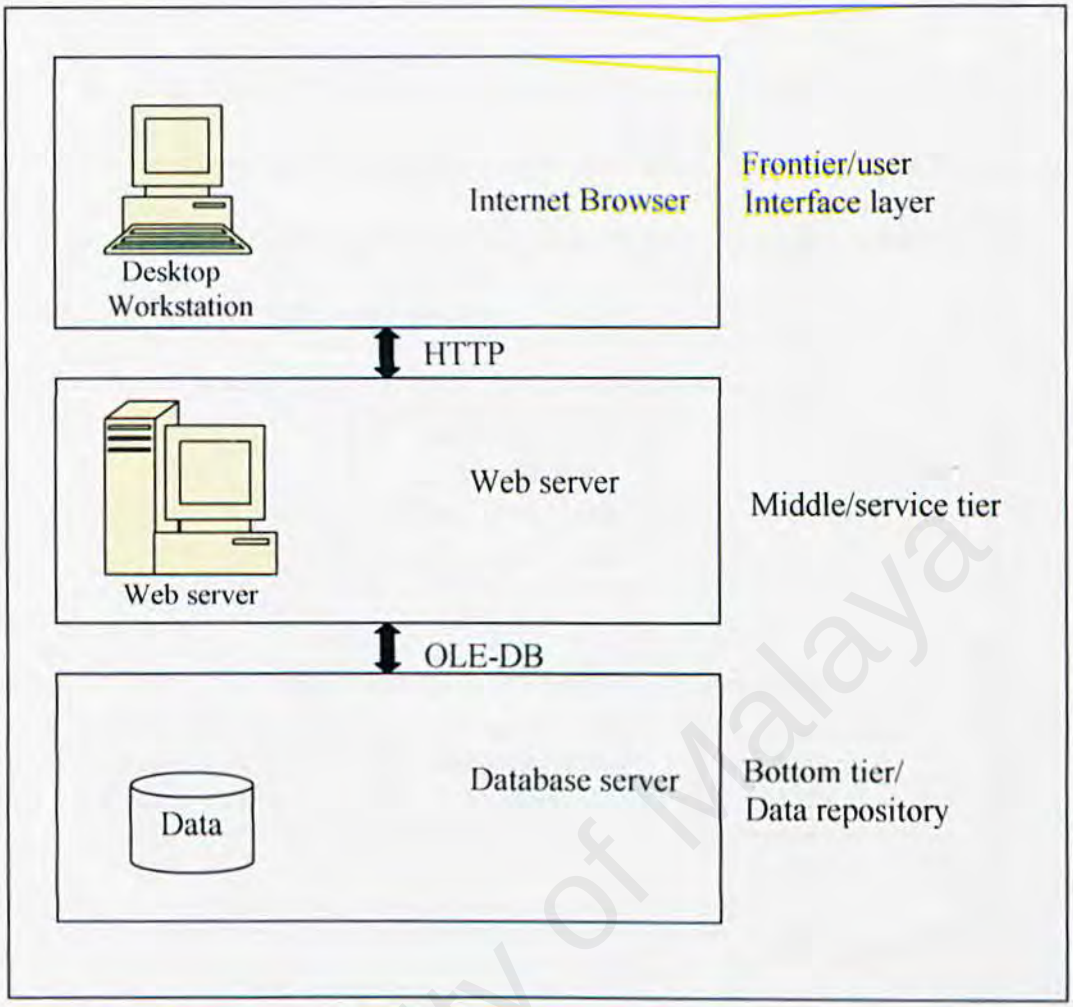


figure 5-1 System tier for Web-based Accommodation finder for student system

As in shown in figure 5-1, the first layer communicates with the second layer through HTTP. This is used to transfer web pages from the web server at the second tier to the browser at first tier. The communication between the second and third tier is done through an OLE-DB connection. Calls to retrieve data from the database are done through OLE-DB connection.

5.3 Process design

Process design describes the process in the form of system structure design. In the Web-based Accommodation Finder for Students system, three modules are involved which are the Accommodation Finder module, the Administrator module and the Ad owner module.

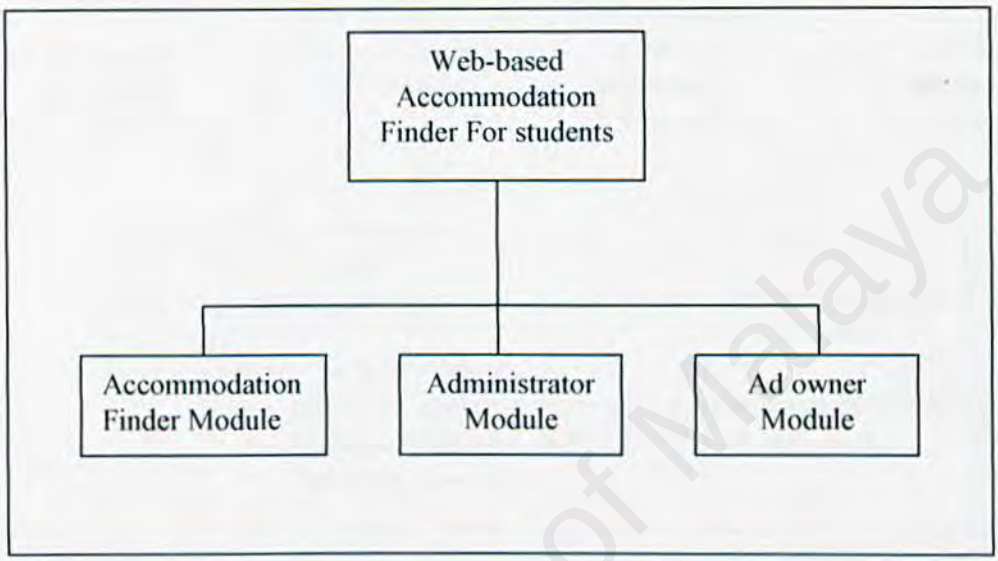


figure 5-2 System structure Chart

5.3.1 Structure design

There are 3 structure designs in this system – Accommodation finder module, administrator module and ad owner module. The structure design points out the functions in each module to be performed by the system.

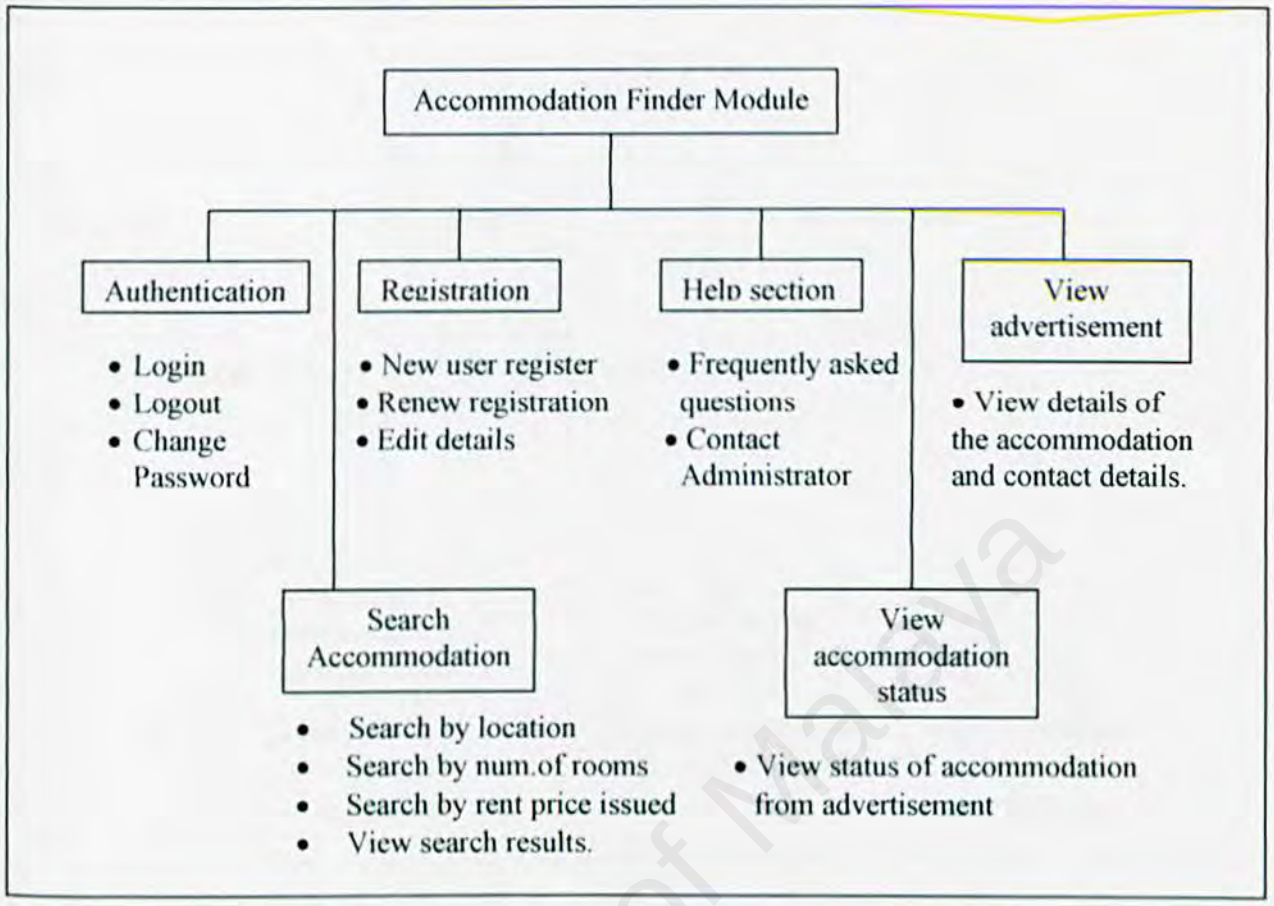


figure 5-3 Structure design for the accommodation finder module

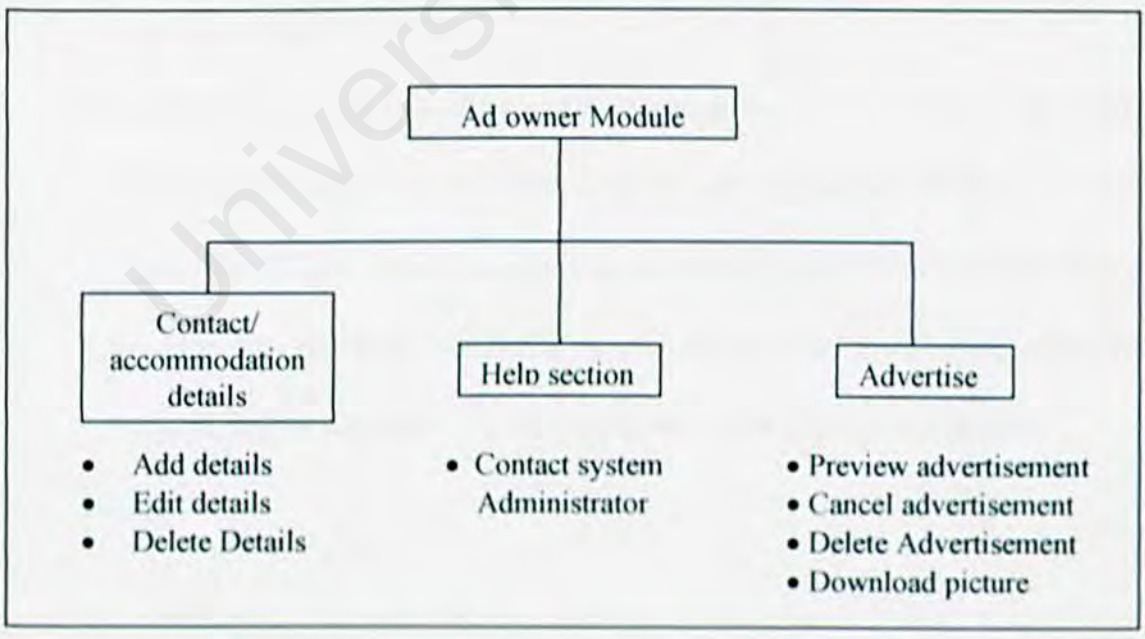


figure 5-4 Structure Design for Ad owner Module

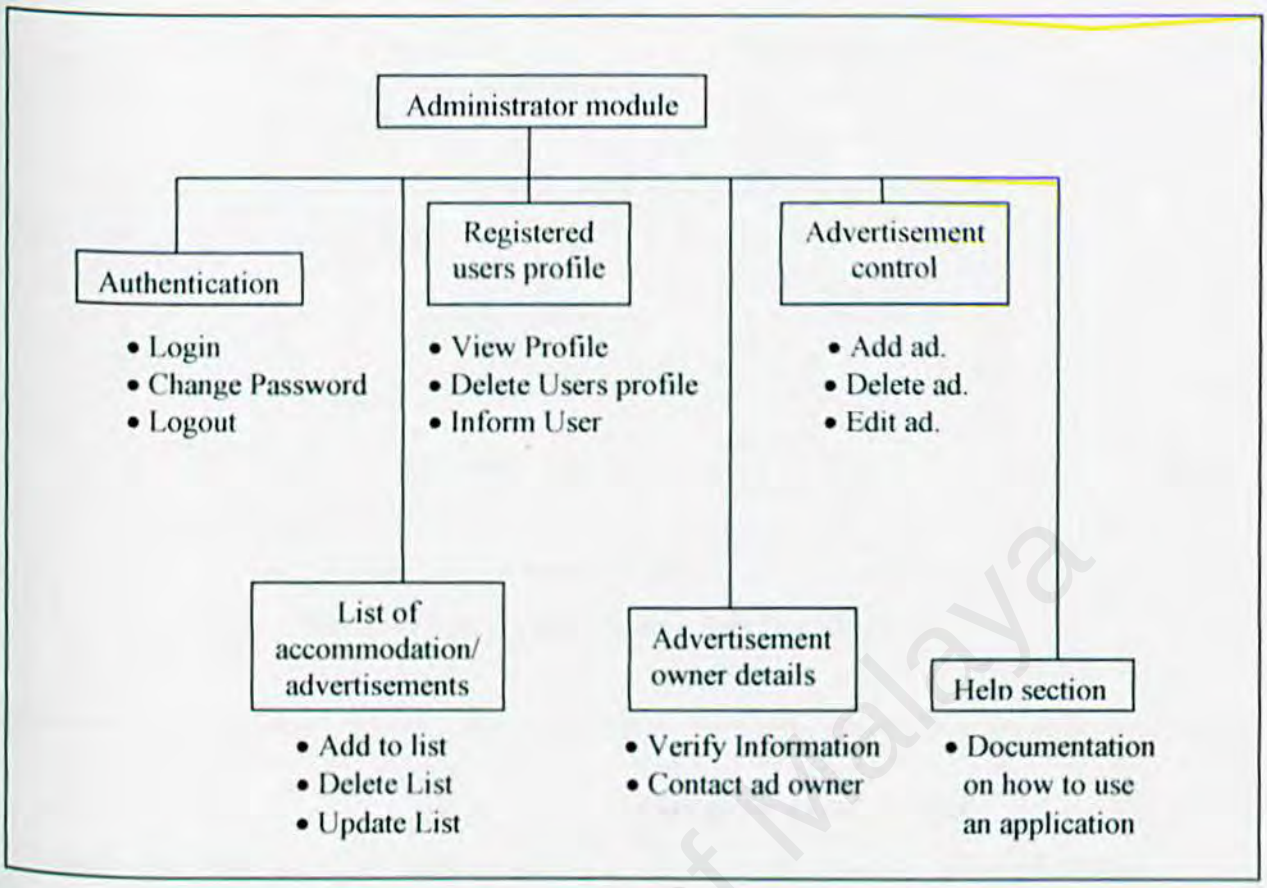


figure 5-5 Structure design for the administrator module

5.3.2 Data flow diagram (DFD)

The DFD is a process modeling tool that represents the functions or processes in a system graphically. It displays the data flow and processes that is involved in a system. The DFD is drawn using 4 main elements; Entity, Process, data flow and data store. The notations which will be used to represent these elements are the Gane and Sarson notation. The following shows the elements with their notations:

Elements	Notations
Data flow	
Data Store	
Process	
Entity	

Table 5-1 Symbol notation in a Data flow diagram

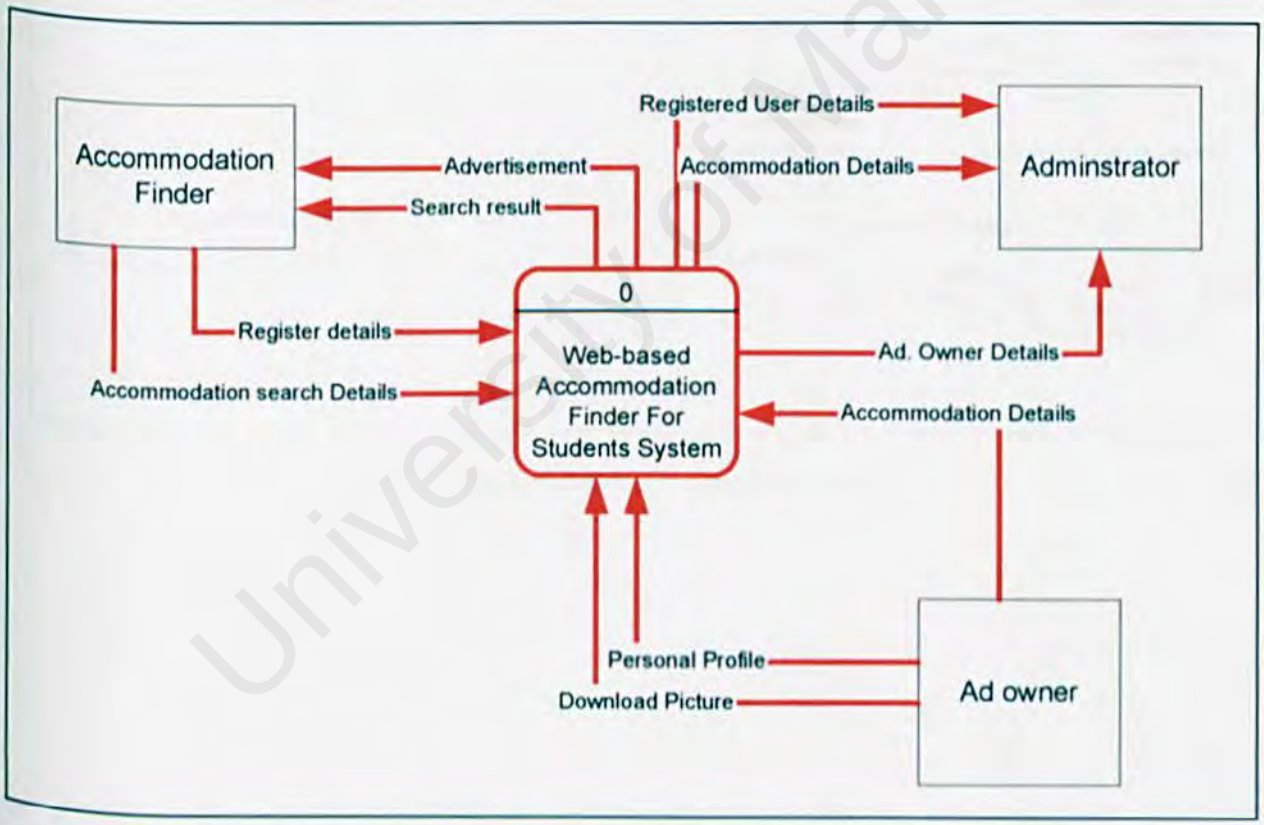


figure 5-6 Context Diagram for Web-based Accommodation Finder For Students System

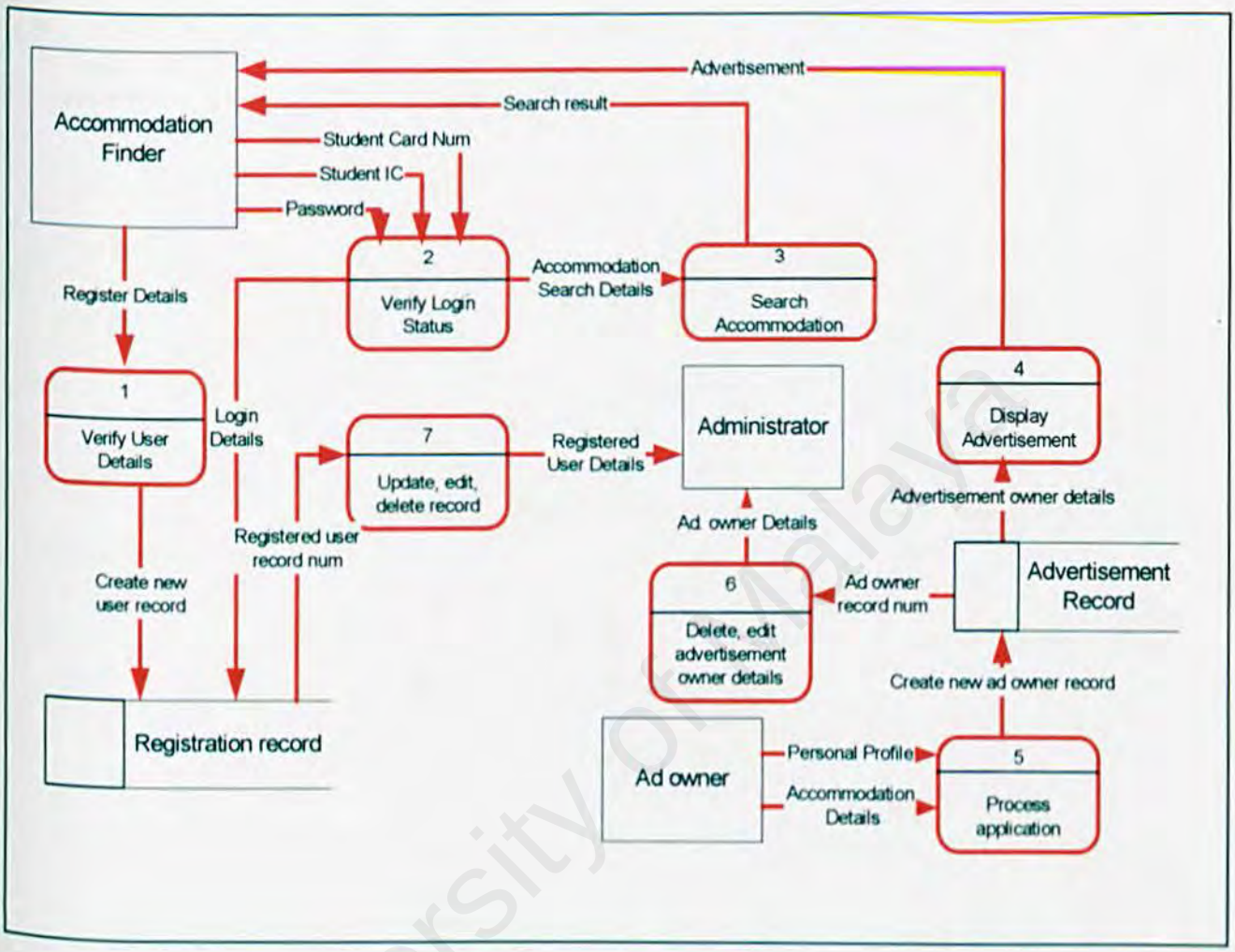


figure 5-7 Context Diagram level 0

5.3.3 Data flowchart

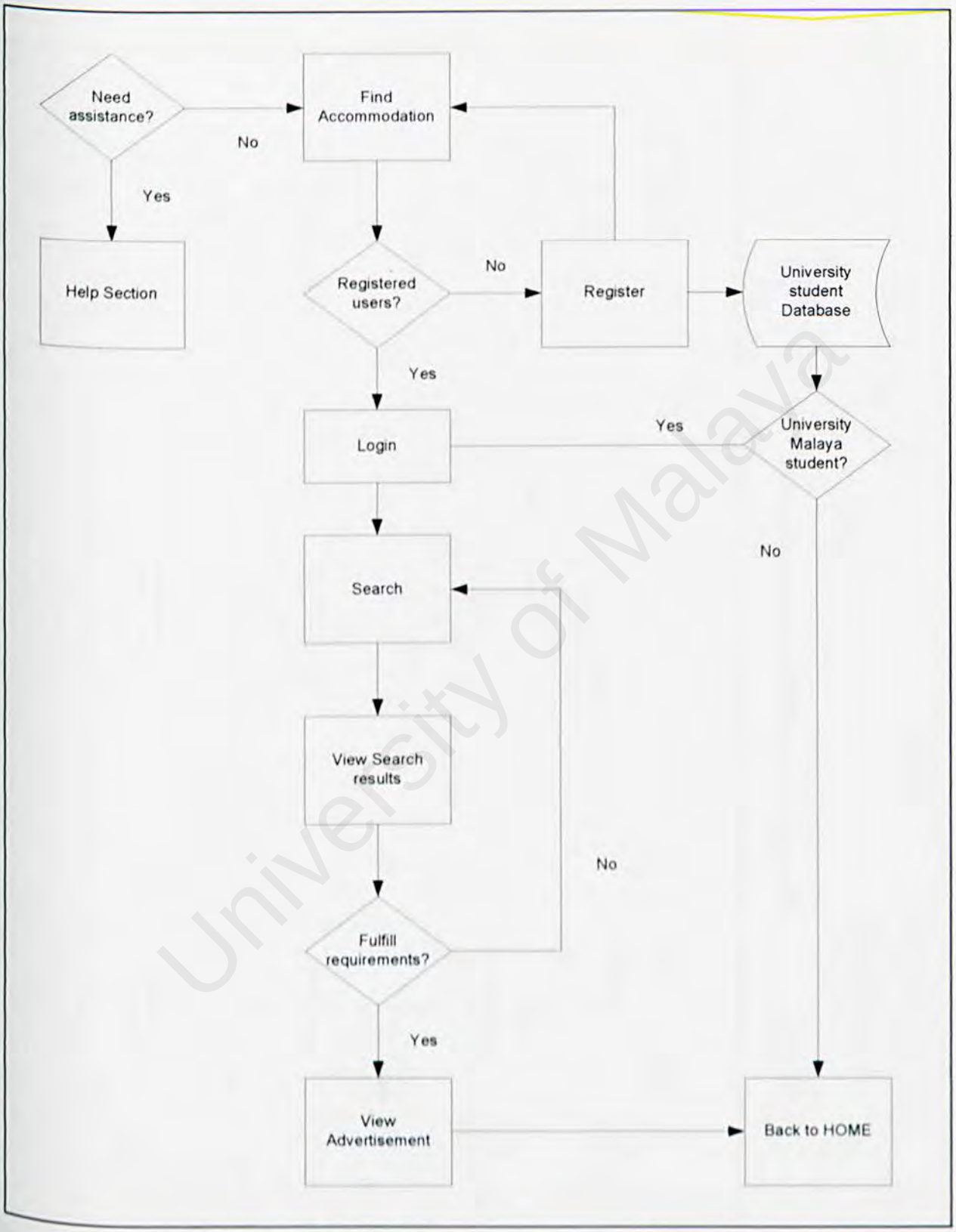


figure 5-8 Flowchart for find accommodation

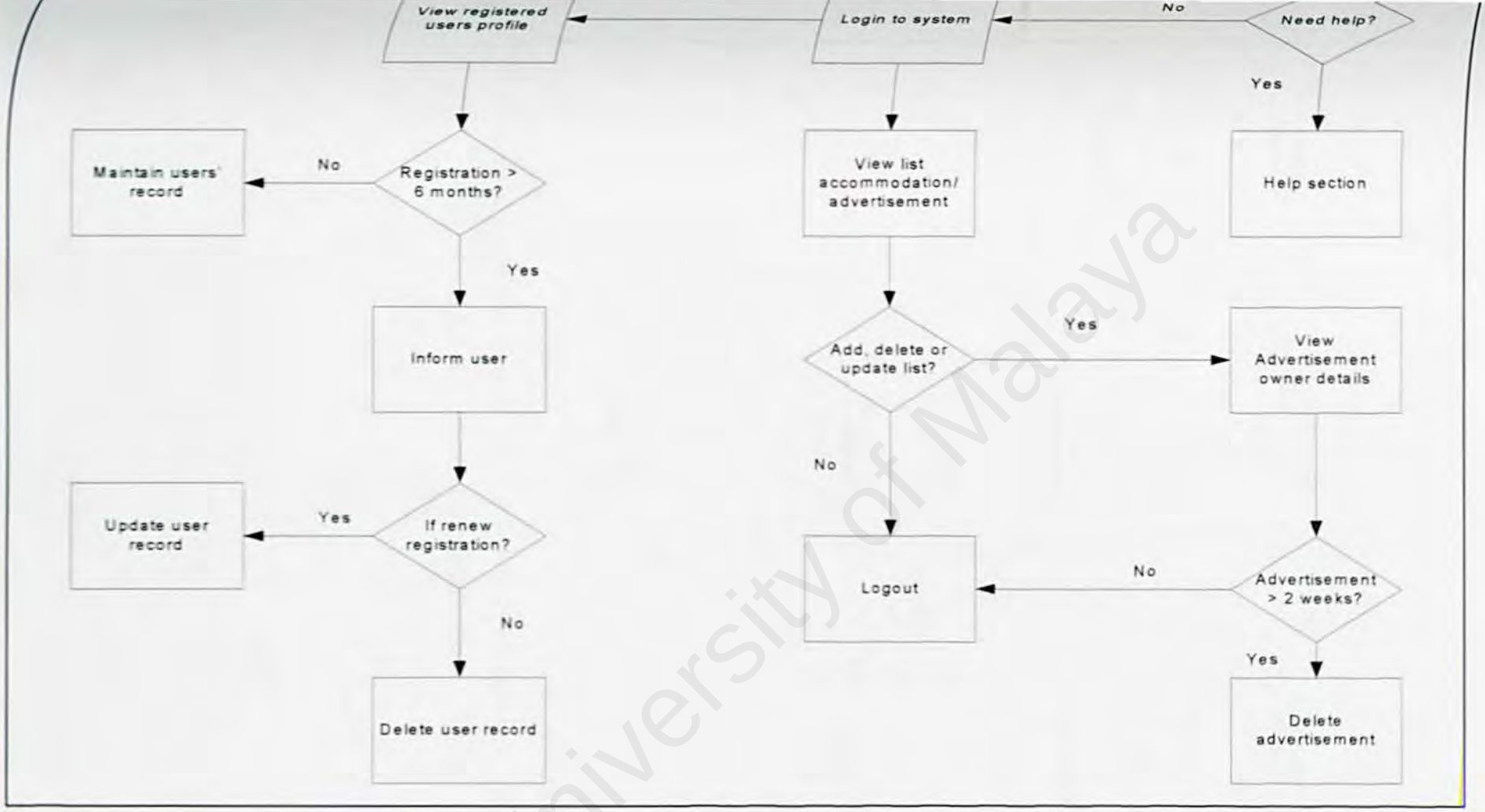


figure 5-9 Flowchart for Administrator activities

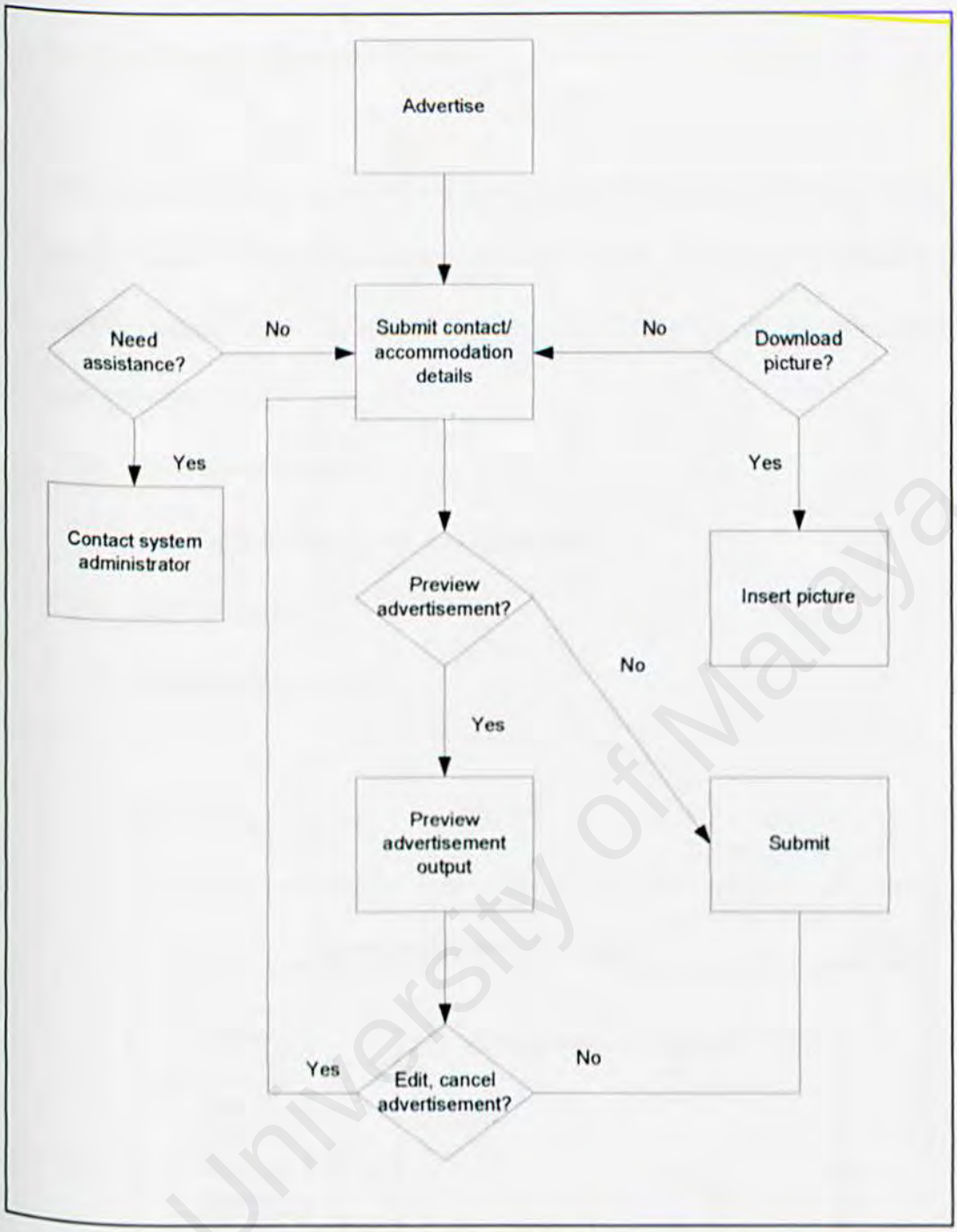


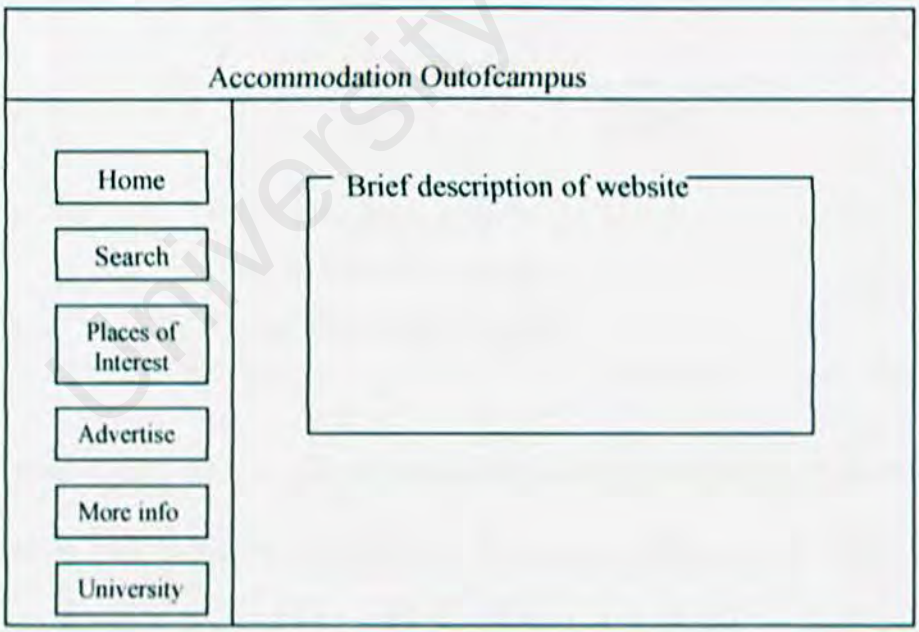
figure 5-10 Flowchart for advertise

5.4 User Interface Design – Draft

The user interface is one of the most important features in a system because it is the first thing the user interacts with when entering a system. Therefore, to ensure high level of usability among users, the characteristics stated below should be implemented in each user interface.

- Easy-to-understand
- Accomplish tasks faster and efficiently
- Easy to learn
- Easy and fun to use.

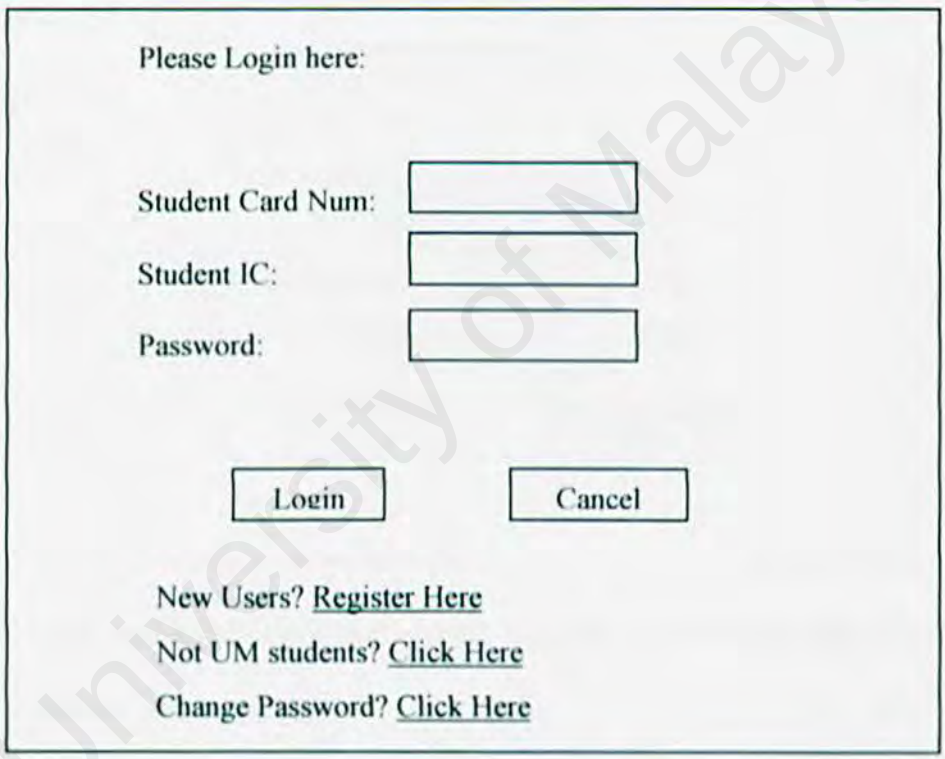
Main Page



The user is displayed with a brief description of the web-sites' objective and functions. Users who would like to find accommodation will click on the *search*

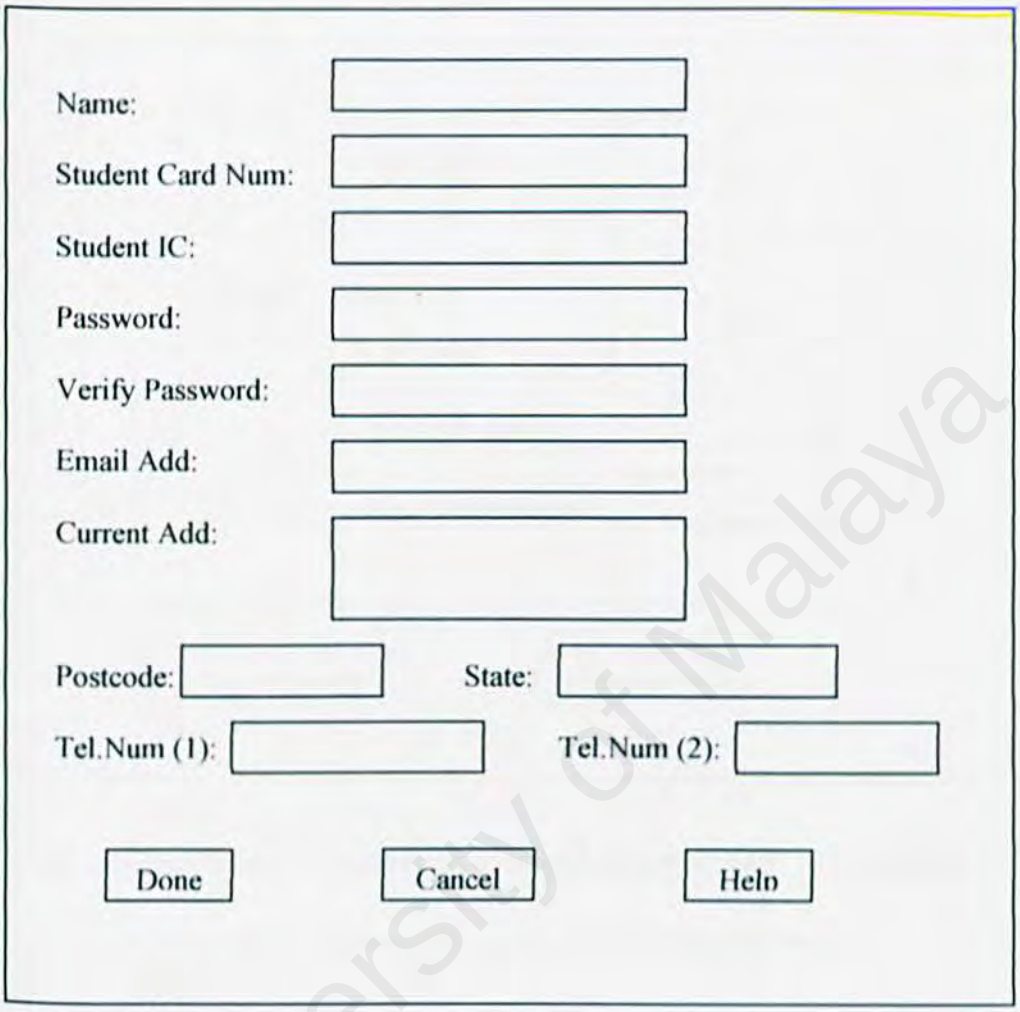
button. *Places of interest* displays a few accommodation places which are famous among students. Users who would like to advertise will simply click on the *advertise* button. The *more info* button informs users on other available accommodation such as hostels. The *University* Button will directly link users to the University Malaya Homepage.

Login Page



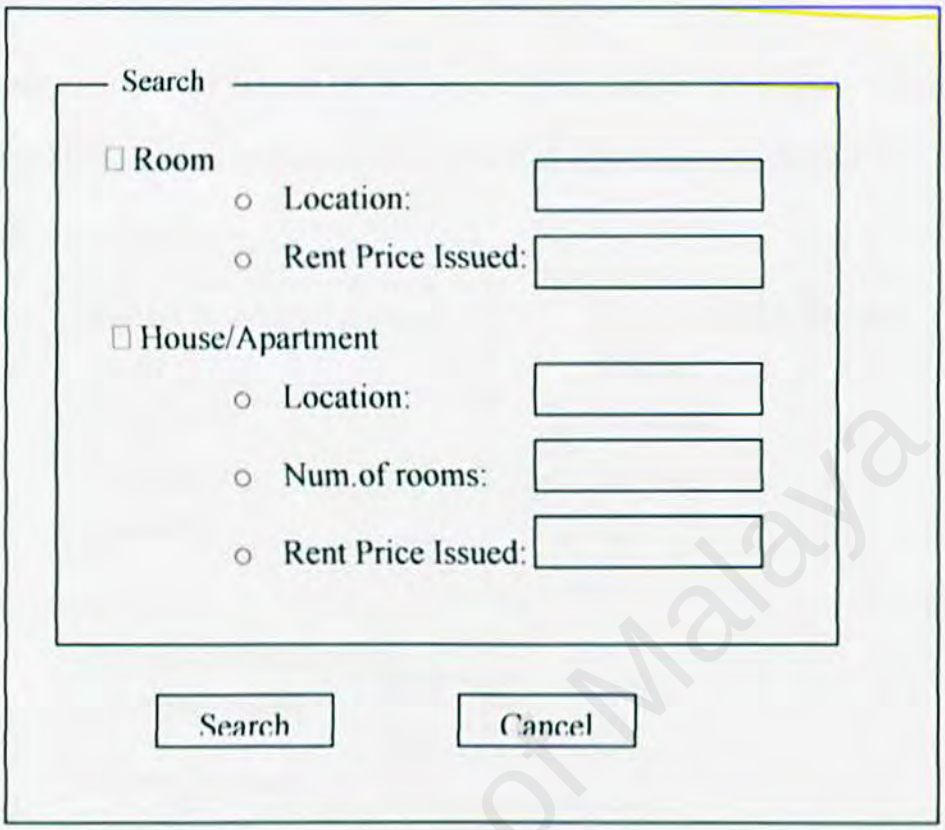
When Users wish to search for accommodation they will be requested to login using their Student Card Number, Student IC and password. Users will be able to change their password by clicking on the link next to *Change Password?*

Registration



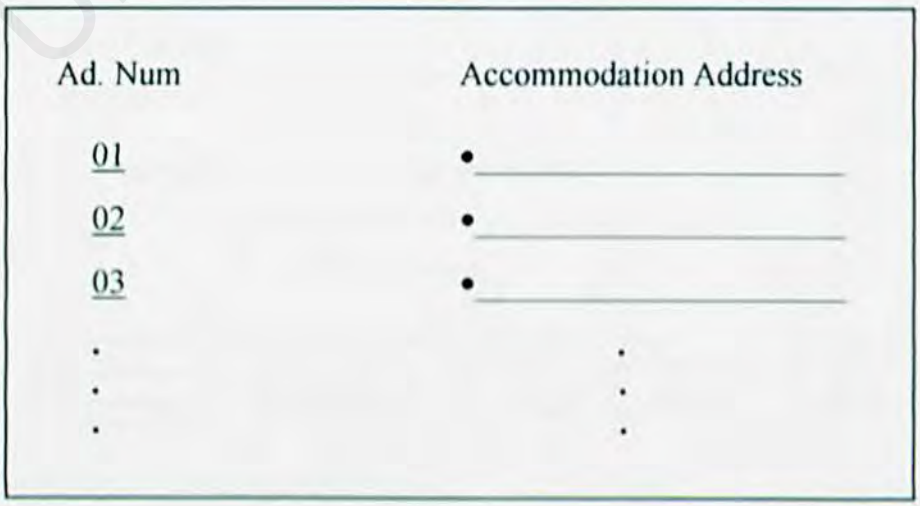
New Users will be required to fill in this form and submit it to enable them to use the facilities in this system.

Search



Users can search for Rooms or House/Apartment and then search by location, rent price issued or number of rooms for house/apartment.

Search Result



After the user has pressed the *Search* button on the search page, they will display the search result which shows the ad. numbers and Accommodation Address that match the criteria chosen by the user. By clicking on the ad num, users will be able to view the accommodation/contact details through advertisements.

Ad owner Details

Contact Information (owner)	Accommodation Address
Name:_____	Address:_____
Tel Num(1):_____	Unit Num:_____
Tel.Num(2):_____	Postcode:_____
Email Add:_____	City:_____

Accommodation Features

Number of rooms: [ ]

Number of floors: [ ]

Number of Bathrooms: [ ]

Other Information

Entry Date, accommodation design, furnished/unfurnished, etc.

Rent Payment

Price Issued: [ ]

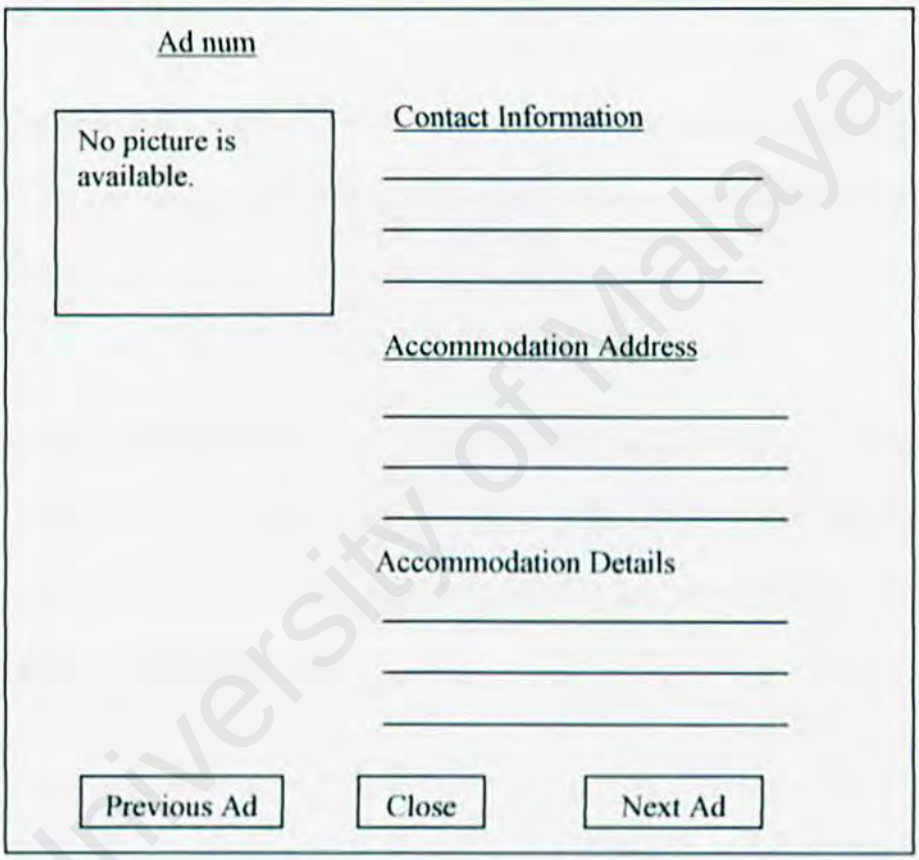
[ ] Negotiable [ ] Not negotiable

Date: [ ]

[Preview] [Submit] [Edit] [Cancel] [Help]

User's who would like to advertise will be required to fill in all the details in the form above to enable his/her advertisement to be listed/produced. After that, the user may preview the advertisement produced or submit the details.

Advertisement



This is the advertisement that is produced from the details entered by the ad owner. The ad owner can download picture of the accommodation place. However, this is optional. The box is left empty if no picture is downloaded.

5.5 Summary

The design process is important in developing a system. Without it, the developer may not get a clear view on how the system should be built and how every function in the system operates. The system architecture describes the nature of the whole operation of the system in a client-server environment.

Data Flow Diagram (DFD) shows how entities and processes are related and how they interact with the attributes of the entities. Flowcharts gives a more wider view of the process flow from one process to the other in a certain state.

The User Interface design which is one of the most important feature in a system provides a view to users to interact with the system without concern on the operations inside the system. Therefore, the design of the user interface should always be laid out carefully to achieve satisfaction among users.

Chapter 6

System Implementation

SYSTEM IMPLEMENTATION

6.1 Introduction

System Implementation is the process of assuring that the system is operational and that all the components needed to implement the system is applicable and inappropriate. Simply said, system implementation is the process of constructing the new system. To construct the new system, development environment was first examined and software and hardware requirements were specified.

This phase involves coding the design representation of the system in programming translation and building the database. Various components of the system stated in the requirements are coded and translated into machine-readable form.

6.2 System Development

System development is the most crucial task to ensure the completeness and successfulness of a system. Before implementing a system the development environment was first examined because it plays a major role in determining the speed of developing the system. Because the system would be connected to the University Malaya student database in order for the system to verify a student that has access to the system, the system would have to integrated into the Information management system in the University. Therefore, it is important for the system to be able to integrate and configured easily in the environment. Implementation of the system should be performed as a part of an Information System and no conflicts among the components

should arise. Weaknesses in the system will be discovered and improved and errors that arise during the development will be removed.

To ensure that the development of the system will be carried out smoothly, selection of suitable software and hardware is important in facilitating the speed of the development of Web Based Accommodation Finder For Students. System development involves choosing the suitable methodology which has been stated earlier in Chapter 3: Methodology, coding forms and functions, determining development tools and setting up database connection.

6.2.1 Development tools

6.2.1.1 Hardware Requirements

The following hardware specifications are required to develop the Web Based Accommodation for Students:

- Pentium III Processor
- 128 MB RAM
- 19.0 GB Hard Disk
- Printer
- Other standard PC components

6.2.1.2 Software Requirements

The following software specifications have been used to develop the Web Based Accommodation Finder For Students:

Software	Purpose	Description
Microsoft Windows Me	System Requirement	Operating System
Internet Information Server 4.0	System Requirement	Web Server Host
Microsoft Personal Web	System Requirement	Web Server
Microsoft FrontPage 2000	System Development	-Coding the Active Server Pages & HTML -Web page designing
Internet Explorer 6.0	System Development	Web Browser
Microsoft Access 2000	System Requirement	-Database development -Query generator and query testing
Microsoft Transaction Server	System Requirement	Active X components registration
Microsoft Word 2000	System documentation	Documentation

Table 6-1 Software requirements specification

6.2.2 Building the database

To enable data to be stored in the Web Based Accommodation Finder For Students System, a database must be built to store information on registered students, landlords/occupant seeker and accommodation details. The design of the database is very important because it greatly affects the performance of data retrieval, updating and query as well in the run-time period of the system.

These are some of the tables that have been built in the database. Symbol ** represents the primary key.

Field Name	Data type	Size	Description
**studentID	Autonumber		Automatically generated when a new student registers.
email_address	char	20	Student email address.
student_card	char	10	Student card number
student_IC	char	12	Student Identification Card Number
name	char	30	Student Name
address	char	50	Student Home Address
password	char	20	Student Password

Table 6-2 Database table of student register information

Field name	Data type	Size	Description
**advertiseID	Autonumber		Automatically generated when new ad is submitted.
name	char	30	name of advertisement owner
phone1	int	10	Phone number of ad owner
phone2	int	10	Other phone number of ad owner
email	char	20	Email address of ad owner
type	char		House/Apartment or room
address	char	50	Address of accommodation
postcode	char	10	Postcode of accommodation
town	char	20	Town where accommodation is situated.
otherinfo	char	50	Other information which ad owner would like to add.
price	int	5	Rent price of accommodation
status	char		Negotiable or not negotiable
vdate	date	20	Date of advertisement submitted

Table 6-3 Database table of advertisement

Field name	Data type	Size	Description
advertiseID	int		advertise ID from advertise table
numofroom	char	10	Number of rooms for house/apartment
numbath	char	10	Number of bathrooms for house/apartment
numfloor	char	10	Number of floors for house/apartment

Table 6-4 Database table of house/apartment

Field name	Data type	Size	Description
adminID	Autonumber		Automatically generates an ID for each administrator
adminname	char	10	Administrator name
adminpass	char	10	Password for administrator

Table 6-5 Database table of administrator

6.2.3 Database connection

The database for the Web Based Accommodation Finder For Students is created using Microsoft Access 2000. Microsoft Access provides an easier way to create and modify tables and their relationship.

In using Active Server Pages, an OLE-DB (Object Linking and Embedding Database) is used via a set of programming interfaces known as the Active X Data Objects, or ADO.

ODBC (Open DataBase Connectivity) is a standard for accessing data. ODBC allows the developer to get at the basic information held in any database. OLE-DB supports database connections through ODBC so that effectively the generic OLE-DB layer will allow connection to the legacy databases through the existing ODBC connections.

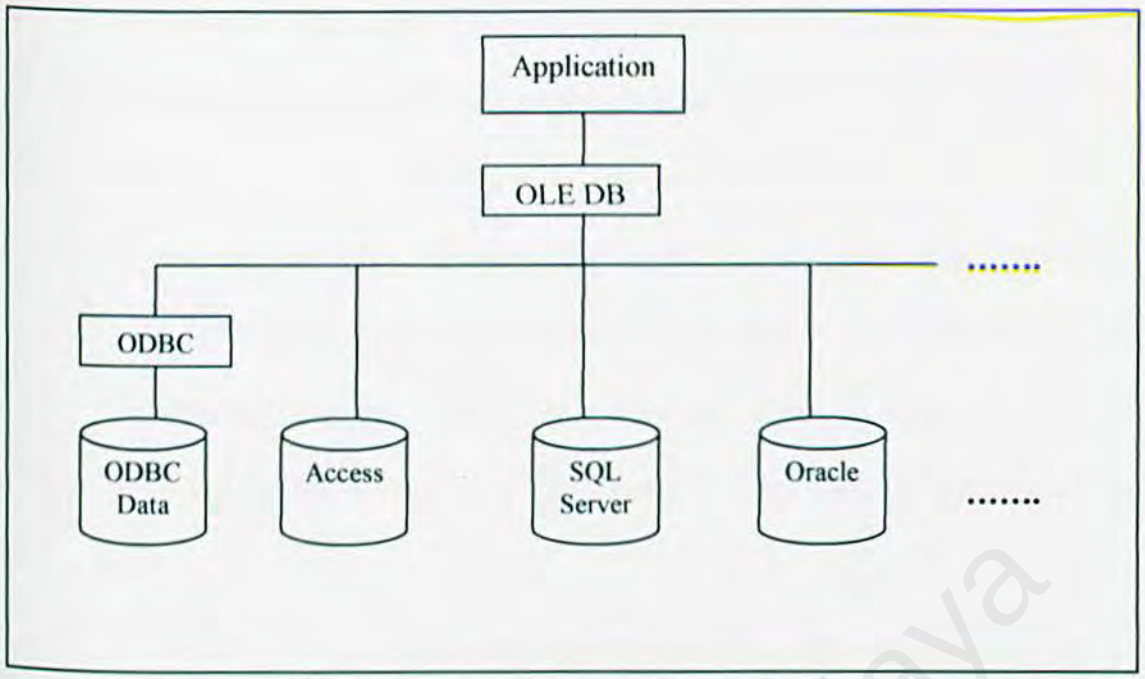


Figure 6-1 Data access using OLE-DB

6.2.4 System coding

Coding is the set of instructions written in order to enable the code to be executed and perform the required function in the system. A good and well-managed program coding will enhance the readability of the whole program. In addition, it provides an easy understanding to the program flow especially for those programs with high degree of complexity.

6.2.4.1 Coding Approach

Coding is an iterative process whereby it is done until the programmer obtains the desired results. There are two types of coding approach; top-down and bottom-up. The bottom-up coding is based on coding the complex lower level

modules and leaving the high level modules merely as skeletons that are used to call the lower modules, whereas the top-down approach is the reverse.

For this system, coding is done using the bottom-up approach. It involves implementing the high level and prioritized modules that were further refined into functions and procedures. The advantaged of this approach are:

1) testing can be carried out on some of the functions as soon as it is completed, and

2) critical functions can be coded first to test their efficiency.

Besides, this technique had a great deal of impact in programming where it has led to more reliable programs that are easier to debug and maintain.

6.2.4.2 Coding style

Coding style and its convention rule are important attributes to the source code and determine the intelligibility of a program. Thus, the coding style used in developing the Web Based Accommodation Finder For Students follows the convention rules of a good programming style that involves the following:

i. Proper variables/fields naming that are not against the reverse name.

ii. Meaningful and understandable function and method declarations.

iii. Standard paragraph indentation for a neater look.

iv. Keep all complex or compound statement as simple as possible to avoid confusion.

6.2.5 System Coding Tool

6.2.5.1 Active Server Pages (ASP)

ASP is used to develop this system because it is a great tool for creating dynamic web pages. It works by allowing the programmer the functionality of a programming language; writing programming code that will generate the HTML for the web page dynamically.

The power of ASP lies in two facts: first, the HTML is not created until the user wants to see the web page, and second, it doesn't care what web browser is being used. ASP isn't the first technology to offer these features, but it is undoubtedly one of the most powerful and widely used in industry; and crucially, it's one of the fastest

The main advantage that ASP brings is its ability to create pages that are sensitive to factors such as time and place, and the user's identity and previous choices and actions. In other words, we can use ASP to customize our web pages to the specific needs of each individual user. It means that the text, images, tables, forms, and even the layout of the page can be selected automatically at the time the user requests the page - and to suit that user's requirement.

6.2.5.2 JavaScript

JavaScript is a cross-platform scripting language which is simple, interpreted and object-oriented. It is used to add simple interactive behaviors to a HTML page by means of a script of keywords inserted into a web page.

There are two advantages of using JavaScript. First, the response time is often quicker, because the script is interpreted on the browser machine – so there is no

network involved. Second, executing script on the browser means that there's less script to be executed on the web server; reducing the web server's workload can be advantageous if lots of people use the web site.

Basically, when writing a JavaScript code, the following is used:

```
....
<SCRIPT LANGUAGE =JAVASCRIPT>
.....JavaScript code goes here
</SCRIPT>
.....
```

6.3 Summary

System implementation is a crucial task in system development. Various task such as building the database, coding every components and ensuring its operability, selecting the most suitable tools in building the components, all make up the system implementation. The Software and Hardware used in implementing this system has been selected based on their features to facilitate in speeding up the development of the system.

Database for the Web Based Accommodation Finder For Students was built using Microsoft Access which enables an easier way to create tables and determining relationships. It also provides an easy way to add, delete or modify tables and relationships. By using Active Server Pages, connecting to the database was done by using ODBC through OLE-DB.

System coding involves executing instruction sets for every function to enable its operability. Good programming practice would enhance the understanding of the code, thus making it easier to make modifications in the future. In the Web Based Accommodation Finder For Students, the bottom-up approach was used in coding the system.

To develop the system, ASP and JavaScript as well as HTML were used in the programming process. These tools have stronger advantages over other tools and therefore was chosen based on their criteria that may facilitate the development of a dynamic, interactive and scalable web application.

Chapter 7

System Testing

SYSTEM TESTING

7.1 Introduction

In every system built, the testing process is one of the most important activities that are done. Testing determines that we have built the right system according to the functional and nonfunctional requirements that has been stated and that all the components are working well.

Testing is focused on finding faults and testing efforts should be more efficient and effective. Although testing is tedious, it is an essential and critical element of system quality assurance and represents the ultimate review of specifications design and code generation.

The Web Based Accommodation Finder For Students was tested in several stages due to the difficulty of detecting errors and then locating and correcting them once it is in operation. System testing is required to ensure the system runs according to its specifications, reliability, and in line with user's requirements and expectations.

7.2 Testing Objectives

The objectives for performing extensive testing during the design and development of the system are the following:

- Achieve high quality assurance such as completeness, accuracy, reliability and maintainability of the software program and its documentation.

- Ensure that the system can perform its functions as expected.
- Reduce cost in maintaining the system.
- A method for detection and removal of errors.

7.3 Testing Technique

The component of a system will be allowed to manipulate the data, and the output will be observed. Thus, a wide range of inputs and conditions are chosen in order to test that particular component. A test point/test case is a particular choice of input data to be used in testing program. Different test cases are needed on different types of testing strategies. There are two types of testing technique applied in the testing stage of the system : white box testing and black box testing.

7.3.1 White box testing

White box testing is a testing case design method that uses the control structure of the procedural design to derive test cases. By using white box testing methods, the test cases with the following characteristics can be derived:

- Exercise all logical decision on their true or false side.
- Exercise all loops at their boundaries and within their operational bounds.
- Exercise internal data structure to ensure their validity.
- Guarantee that all independent paths within a module have been exercised at least once.

7.3.2 Black Box testing

Black box testing focuses on the functionality requirements of the system. It enables the developer to derive sets of input conditions that will fully exercise all functional requirements from an application. Black box testing was not used as an alternative to white box testing technique. Rather, this technique is used as a complementary approach that is likely to uncover a different class of errors.

It also tests the functionality of the system in an ad hoc basis without knowing the logic structure of the code. Input is provided and output is verified manually to check for accuracy.

Black box testing attempts to find errors in the following categories.

- Incorrect or missing functions
- Interface errors
- Errors in data structures or external data access
- Performance error
- Initialization and termination errors

7.4 Testing Strategy

Testing strategies is a series of steps that are implemented sequentially. Testing involves testing the components, group of components, subsystems and the whole system. The following are the testing steps that are taken:

- Unit testing.
- Integration testing

- Function testing
- Performance testing
- Acceptance testing
- Installation testing

System Testing

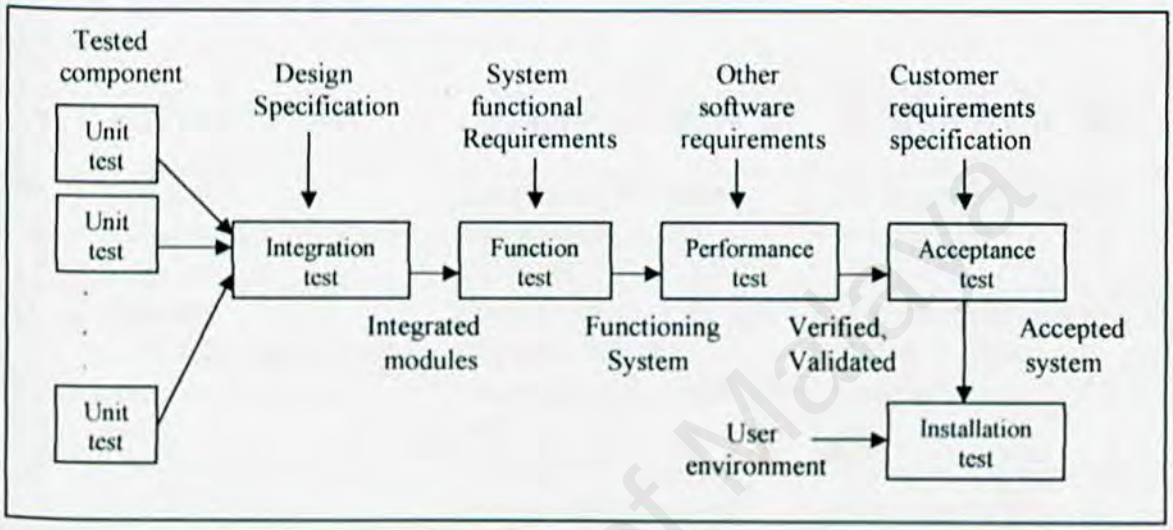


Figure 7-1 Testing steps

7.4.1 Unit Testing

Unit testing verifies that component functions properly with the types of input expected from studying the components design. Unit testing is done in a controlled environment whenever possible, so a predetermined set of data is fed to the component being tested and output actions and data produced are observed.

Each component is treated as a standalone entity and tested individually to ensure that they operate correctly. The unit test is usually white box oriented and the step can be conducted in parallel for multiple components.

7.4.1.1 Testing Examples

Each table in the database has at least associated with two trigger problems which are Record Adding and Record Deleting. Unit testing was carried out on each trigger program once it was completed. Table below shows the test case for unit testing on the Advertise Adding and Deleting program.

Step	Test Procedure	Expected Output	Test Result Analyzing
1	Add a new accommodation record to the system	The record is inserted permanently in the database	The record is inserted successfully
2	Enter an accommodation criteria and search for that record	The information for that accommodation is selected and shown to the user.	The accommodation's record is shown successfully.
3	Press Delete to remove the selected record from the database	The record is deleted permanently from the table.	The record is removed permanently from the table.

Table 7-1 Unit testing example

Module testing is carried out to ensure that the module is functioning as expected. The table below shows the test case for module testing for the search program.

Step	Test Procedure	Expected Output	Test Result Analyzing
1	Click Login to log on to the system	Registered Users Page is shown	Registered Users Page shown successfully
2	Click Search Advertise to search for accommodation	Search Form is shown	Search form shown successfully
3	Fill all the required search criteria and click search button to search for record	The record is compared with records in the database.	Criteria is accepted and compared successfully.
4	Click view button to display the information that matches the criteria.	The correspondence record in the database is selected and displayed.	The correct record is displayed.

Table 7-2 Module Testing Example

7.4.2 Integration Testing

When collections of components have been unit-tested, the next step is ensuring that the interfaces among the components are defined and handled properly. Integration testing is the process of verifying that the system components work together as described in the system and program design specifications. Testing a specific feature together with other newly developed feature is known as integration testing.

In other words, when the individual components are working correctly and all it meets the objectives, these components are combined into a working system.

This integration is planned and coordinated so that when a failure occurs, the cause may be detected.

In this system, the bottom-up integration approach is used. With bottom-up testing, each component at the lowest level of the system hierarchy is tested individually first. Then, the next components to be tested are those that call the previously tested ones. This approach is followed repeatedly until all components are included in the testing.

At the end of performing integration testing, the whole system is completely assembled as a package where else interfaces and linking errors have been detected and corrected.

7.4.3 System Testing

System Testing is a series of different tests designed to fully exercise the system to uncover its limitations and measure its capabilities. The objective is to test an integrated system and verify that it meets specified requirements. Although each test in this system has a difference, all work towards one goal, to verify that system elements have been properly integrated and they perform allocated functions.

7.4.3.1 Function testing

Function testing evaluates the system to determine if the functions described by the requirements specification are actually performed by the integrated system. The result is a functioning system. The function test compares the system being built with the functions described in the requirements specification.

7.4.3.2 Performance Testing

When all the functions work as specified, the Performance test compares the integrated components with the nonfunctional system requirements and compares the system with the remainder of the software and hardware requirements. These requirements, including security, accuracy, speed and reliability constrain the way in which the system functions are performed.

7.4.3.3 Acceptance Testing

When the performance test is complete and the system functions according to the system description, the next step is conferring with the users to make certain that the system works according to the user's expectation. An acceptance test is performed where the system is checked against the user's requirements description. This assures the user that the system they requested is the system that was built for them.

7.4.3.4 Installation Testing

Installation testing is the final testing to be performed which allow users to exercise system functions and document additional problems to make sure the system still functions as it should.

7.5 Summary

This chapter describes all the testing performed in the Web Based Accommodation Finder For Students. This includes unit testing and module testing, integration testing, and system testing.

The Web Based Accommodation Finder For Students has been tested and debugged effectively to achieve the objectives of the system. Nevertheless, there is no foolproof testing that will ensure that programs are free form errors. The best approach would be to use a combination of testing method – black box and white box testing together with inspection.

Through all the testing phases, it is easier to ensure the system's qualities and strengths. Debugging and fixing of the program can be done and the limitations of the system's functionalities can be found and improved. As a conclusion, the testing phase is very important and it must be done repeatedly and carefully to assure good system quality.

Chapter 8

System Evaluation

SYSTEM EVALUATION

8.1 Introduction

In the process of developing a system, various problems have been encountered. Some have been solved and some are still yet to be discovered and overcome. These problems were solved through many ways such as doing research and studies in fields such as the Internet, Online Books, journals and reference book.

System Evaluation is a review after the System Implementation to determine strengths and limitations or constraints of the system. In order to provide feasible information to enhance the project and improve system performance, all problems faced during every phase of the system development is highlighted. Other than that, proposals and recommendations are made for future enhancements of the system.

8.2 Problems Encountered And Solutions

8.2.1 Analysis phase

- Determining the scope of the system

Earlier in the development it was hard to determine the actual users who would use the system and the task they would be able to perform when using the system. This may be due to insufficient knowledge and inexperience on developing Web Based Systems. To solve this matter, research was done on

existing systems which provides similar services as of that expected in the Web Based Accommodation Finder For Students.

- Scheduling the tasks to be performed

This is also due to insufficient knowledge and inexperience in developing Web Based Systems. Project schedule should be carefully planned to achieve a systematic progress and ensure on-time delivery of the system. Prior to no experience in developing Web based systems, this proved to be a tedious task especially when estimating the suitable period for every phase.

8.2.2 Design Phase

- Problem in designing the database

Database was built using MS Access and not as to what was proposed earlier which is MS SQL Server 7.0. MS Access proved to be an easier tool to learn and it also makes creation of tables and relationship as well as the adding, deleting and modifying of tables and relationship much more efficient. Other than that, the realization that the Web Based Accommodation Finder For Students is not a complex system which stores a large amount of data contributes to this decision. At an earlier stage of the database design, MS SQL Server was first suggested to use to build the system. It was a difficult tool to learn and there were not many who knew how to use it effectively. After many attempts, and yet still unsuccessful to grasp the knowledge of building the system using MS SQL Server and connect it to the web pages, the decision to use MS Access was made.

- Lack of skills

Designing the interface of a web page is not as easy as it looks especially if the developer has set a goal which is to attract users in using their system. Decisions to place certain information in the interface, how it should look, the color, font, and arrangement of the interface components such as buttons, links, and etc, all contribute to this problem.

To enhance the understandability of users, other web site systems were reviewed and research was done from books and the Internet on how to build a good user interface.

- Time constraints

There was not enough time to study and produce the best solution of design. This is also due to inexperience and insufficient knowledge of designing a system.

8.2.3 Implementation phase

- Not being on schedule

As the project schedule was created without any experience or knowledge on how long it takes to finish one phase, it is expected that the completion of one phase and the time period it takes to complete one phase would not follow the actual schedule. Despite all the difficulties encountered because of this, the development of the system was successfully completed on time.

- Difficulty in choosing suitable development tools.

There are many software tools that are available for the development of the Web Based Accommodation Finder For Students as stated in the earlier chapters. It is difficult to choose the most suitable development tools from a variety of choices. Choosing a suitable technology and tools was a critical process as all tools have their own strength and weaknesses. Besides that, the availability of a technology, hardware and supporting software to support, its learning curve, compatibility with the existence operating system and technologies are also a major consideration.

In order to solve the problem, seeking advices and views from project supervisor, course mates and seniors engaging in similar projects were carried out. Furthermore, a great deal of reading and research from many sources, like books and the Internet helped to solve the problem.

- Problems on Installation

There were a lot of problems during installation and configuring Windows 2000, IIS and other tools before starting the coding phase. The needed software and tools were successfully installed only after a few times of formatting and reinstallation.

From experience, it is essential to know the sequence of product installation. This is to ensure smooth execution without system errors.

- Lack of knowledge in Active Server Pages (ASP)

Since there was no prior knowledge of programming in ASP, there was an uncertainty on how to organize the codes. These new programming languages and concepts were never studied before and to implement such an application requires a good grasp of the languages used.

A lot of reference and studies had to be done in order to learn the language much better. Sources such as reference books and the Internet proved to be useful. Referring to those who have knowledge in using ASP has helped a lot in improving the understanding of the language.

8.2.4 Testing phase

- Programming errors

The testing of the system uncovered many programming errors when executed. Correcting these errors was a very tedious task as some of the codes involved the connection to the database.

In order to correct the errors, references from books and the Internet as well as referring to 'experts' helped to correct all the errors and at the end of the testing phase all the programs could be executed smoothly.

8.3 System Strengths

- Simple, user-friendly and easy to use interface

As with most web sites, the interface is one of the most important characteristic in ensuring that the user would actually like to use the system. The interface for Web Based Accommodation Finder For Students is designed based on Graphical User Interface (GUI). The interface is easy to understand as all the information's are arranged in a way to enhance readability. No practice is needed as all the control objects on the interface are fairly well understood. Users will find that they can perform any task with ease. Each page has a high degree of consistency among the pages; this will avoid the users from becoming confused when navigating from one page to another.

- Display process and error messages

There are many processes involving the system and its database. Therefore, it is important to let the user know what the system has done when clicking on any links or command buttons. Messages like "Successfully registered" or "Access denied! Invalid password" will be displayed to inform the user.
Without these messages user might think that the system is faulty when no results are returned when a command is executed. In addition, user can also know when record is inserted into the database successfully. When a process fails, an error message will alert the users. Error message will also be prompted

to the user if an important field in a form is not filled. As a result, the system tries to decrease the total number of errors occurred.

- Good Security Features

Different levels of users are created for different level of permissions on the system. The user needs to have the right password and information be granted the access to the system and perform specific tasks.

Once the user log-ins, they have a session time which ensures that if no function is performed within a certain time after log-in, that is the system is left idle, the session time will expire and the user will have to log in again. This is to avoid intruders or trespassers from using the system in case the user forgets to log out.

8.4 System Constraints

Due to time and knowledge limitation, there are a few system constraints shown below. This includes:

- Performance

Performance level and time can be adjusted in IIS, yet it still depends on internet connection speed on the telephone line.

- Password not encrypted

Because the password is not encrypted, this would make it easier for an intruder

to break the password thus revealing the profile of a valid user.

- No Real-time interaction

No Real-time interaction exists in the Web-Based Accommodation Finder For Students. That is there is no way for users to interact directly or lively at the same time with another user.

- No Booking Facility

The booking facility which was earlier stated in the project definition could not be implemented because it involves dealing with price. And this would be most suitable to implement if there was real-time interaction between the accommodation finder and landlords/occupant seeker.

- Implementation Environment

The Web Based Accommodation Finder For Students can only be implemented in the University Malaya Student Management System because the only way it can verify if a user is a UM student or not is only through the UM student database. Thus, the only way it can connect to the UM database is by building the system in the University Malaya environment.

- The need for an email address.

For every registered user (student) and the advertisement owner (landlords/occupant seeker), an email address is compulsory. This is because apart from telephone numbers, an email address would be a good alternative for

means of communication. Thus, for those who do not have an email address would have to create one before registering and advertising.

- The task of deleting an advertisement manually

Advertisements will be deleted after 1 month from the date it was submitted. This task is done by the administrator manually. So, administrators must check the date in every advertisement from time to time to ensure that the advertisement is deleted on its expired date.

8.5 Future Enhancements

System development is a dynamic process and changes to the system must be expected from time to time to improve the overall functionality of the system. Although, during the development of this system, due to the limited resources that are available has caused some certain aspect of the system to be overlooked.

However, after the development of the system has been completed, some certain important aspects that can be added on for future enhancements have been identified.

The additional features that can be implemented in the future are the following:

- Real-time Interaction

Real-time interaction between the advertisement owner and the user who views the advertisement would be very helpful in many ways. An example of Real-time Interaction would be an ICQ or an Instant Messaging tool. This would mean that

the user can interact directly to the ad owner and ask questions regarding the advertisement without having to wait for the ad owner to read emails and then waiting for the reply. This would also reduce the task of dialing up a phone number especially a mobile phone number which is not always reachable at all times.

- Booking facility

By implementing Real-time interaction between the accommodation finder and the ad owner, negotiation could be done between the two parties because booking an accommodation involves money and agreements. After viewing the advertisement and deciding whether to rent, the user can then contact the ad owner directly.

- Report generation

The report generation facility will display the accommodation available for a certain month (selected by users). This will make it easier for ad owner to submit information on accommodation as early as possible and users may book the accommodation say, 5 months before the availability of that accommodation. The ad will be added to a special listing where users can check which accommodation that may be rented that is soon to be available in the near future.

- Advertisement deleted automatically

The administrator should not have to worry about making sure that they have to delete an advertisement on time. The advertisement should be deleted automatically after 1 month after the date it was submitted. This could greatly reduce the overloading of data and advertisement that exceeds its expired date.

- Encrypted password

This would increase the level of security for users who have access to the system. By encrypting the password, intruders or hackers would have a difficult way of actually revealing a user password because they would have to decrypt it and this isn't an easy task.

- More Administrator Task

More administrator task should be added. The administrator should be able to update and edit information on users and accommodation. The administrator should also have the ability to communicate directly with users of the system to inform them on something. Another task of the administrator that could be added is to actually monitor the operation of searching for accommodation and assist users in the process. They should also be able to generate reports based on the information provided.

8.6 Project Conclusion

Web Based Accommodation Finder For Students is a system that facilitates users in finding accommodation in an easier and faster way. By just logging in, the user has access to search for accommodation by selecting criteria's on the type of accommodation they are looking for and viewing specific details on the advertisement. And if the ad owner uploads a picture on the accommodation, it will facilitate the user on making decisions whether to rent or not to rent. Besides that, it also provides an easier and free way for landlords/occupant seeker to post an advertisement on the Internet without worrying about cost. By implementing future enhancements would greatly improve the ability of the system thus making it a more powerful source of information.

In the process of developing this system, I have enhanced my knowledge especially on programming skills and system development. The application of Software Engineering principles, fundamentals and additional knowledge in programming languages, skills in database management system and others all contribute to the success of developing this system. Tools that have never been used before this gave me a new experience in developing techniques for future use. The experience gathered would surely give me a solid foundation in developing a system in the future.

By setting goals and objectives before starting to development of the system has made the process much more systematic and I actually know what is to be expected of the system. Many conflicts have been resolved especially in real world situation and

programming tools. Overall, this project has achieved its goal and fulfilled its objectives and requirements that were determined earlier in the analysis phase with minor adjustments and enhancements.

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12) http://www.accommodation.soton.ac.uk/

13) http://www.accommodationfinder.com.au/

14) http://www.asp101.com

15) http://www.asp-help.com

16) http://www.aspobjects.com

APPENDICES

Quetionnaire

Title: Web-based Accommodation Finder For Students.

This questionnaire is performed to obtain information on the requirements of students who are interested in finding accommodation outside campus on-line. Please fill in your particulars and proceed with the questionnaire.

Personal Particulars

Name: _____

Age: ___

Present Address: _____

_____

Gender: ☐ Male ☐ Female

Please tick on the box next to the answer chosen **(one answer per question)**

1. How frequently do you use the Internet?
   - ❑ Often
   - ❑ Rarely
   - ❑ Never

2. Do you find the Internet useful in finding information?
   - ❑ Yes
   - ❑ No

3. If you were looking for accommodation outside campus, would you be interested in searching in the Internet?

   - ❑ Yes
   - ❑ No

   Please state your answer: _____

   _____

4. What are the characteristics that should be taken notice when looking for a house/room to rent? ***You can tick more than one.***
   - ❑ Rent price
   - ❑ Number of rooms in a house
   - ❑ Size of house/room
   - ❑ Number of people already occupying the house/room
   - ❑ Furnished/Non-furnished
   - ❑ Location
   - ❑ Facilities *(bus-stop, food stalls, shops, etc...)*
   - ❑ Location of house/room
   - ❑ Environment
   - ❑ Security

5. Do you have your own transport?
   - ❑ Yes
   - ❑ No

6. What means of transportation would you be willing to take?
   - ❑ Bus
   - ❑ LRT
   - ❑ Others (please state): _____

7. Which rent price would you prefer when looking for a house to rent?
   - ❑ RM600-800 *(non-furnished)*
   - ❑ RM800-1000 *(half-furnished/fully-furnished)*
   - ❑ RM1000-1200 *(fully-furnished)*
   - ❑ RM1200-1400 *(fully-furnished)*
   - ❑ Others (please state): _____

8. How much would you be willing to pay when renting a room?
   - ❑ RM100-150
   - ❑ RM150-200
   - ❑ RM200-300
   - ❑ Less than RM100

9. If given an option, would you choose to live in an area with a large population?
   - ❑ Yes
   - ❑ No

   Please state your reason: _____

   _____

10. Do you have a part-time job or interested in finding a part-time job?
    - ❑ Yes
    - ❑ No

11. Do you mind walking to/from campus if the accommodation suits you?
    - ❑ Yes
    - ❑ No

    If yes, how much time would you prefer to walk? : _____

12. When looking for a house to rent, how many rooms would you prefer in the house?

- ❑ 2
- ❑ 3
- ❑ 4

13. Do you prefer staying inside or outside campus? Please state your reason.

_____

_____

_____

Thank you for your cooperation!

Statistic results of the survey

- How useful is the Internet?

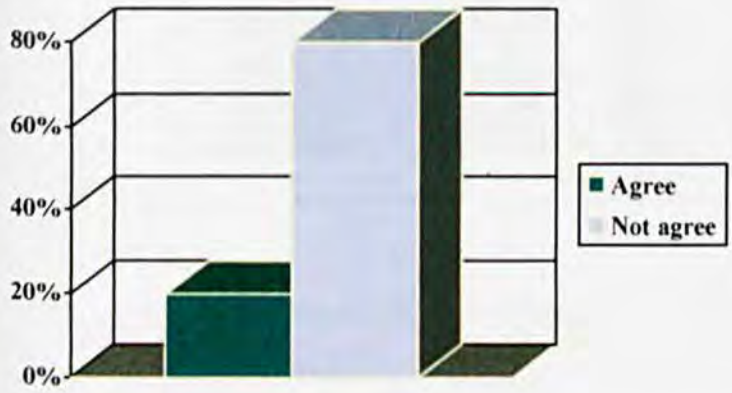


figure 1 Students who find the Internet as a useful source to search for accommodation.

From the graph shown above, about 20% agree that the Internet is a useful source for finding accommodation and 80% do not agree. Although many students use the internet often for various purposes, they find that the internet may prove to be inefficient in finding information on accommodation places.

Causes:

1. Unreliable information
2. Unfulfilled requirements
   - Unsuitable location
   - High rent price
3. Easier to ask friends/view advertisements pasted at bus stops, lamp posts, notice boards, etc.

- What do accommodation finders require in their search?

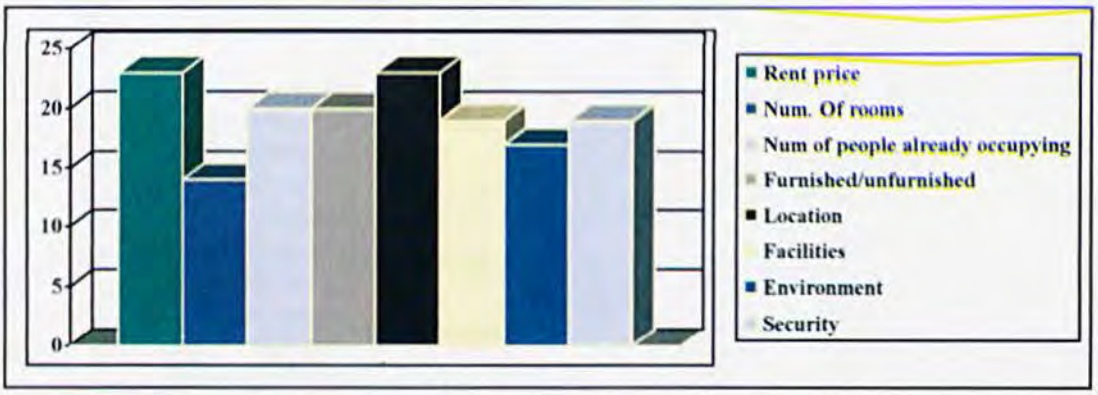


figure 2 Important features that are taken into account when searching for accommodation.

From the graph shown above, it is quite clear that many students focus more on the location and rent price of the accommodation compared to other features.

- How much would students be willing to pay to rent a house?

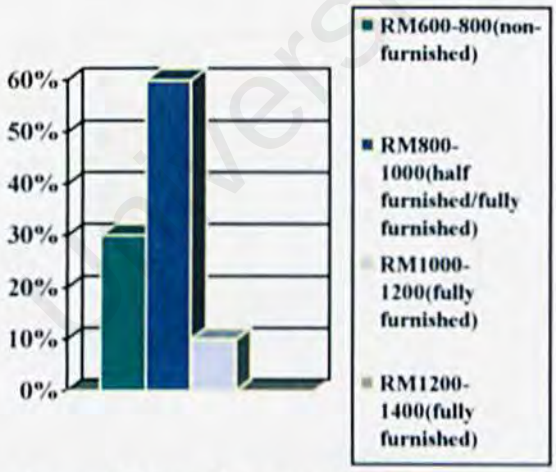


figure 3 Rent Price (house)

From the graph shown above, most of the students would prefer the rent price for a house to be in the range of RM800-1000 (half furnished/fully furnished)

- How much would students be willing to pay to rent a room?

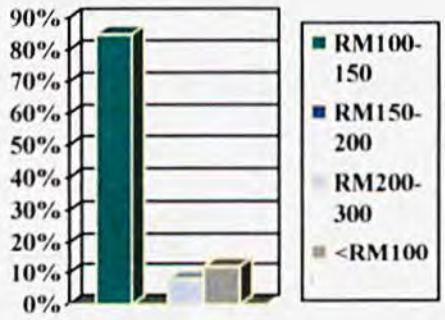


figure 4 Rent price (room)

From the graph shown above, most of the respondents prefer rent price for rooms to be in the range of RM100-150.

- What kind of transportation would a student prefer to take when traveling to/from campus?

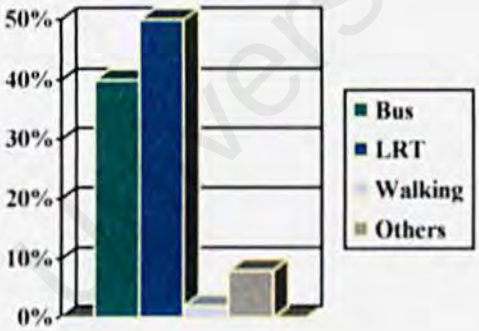


figure 5 Means of transportation

From the graph shown above, it shows that most of the respondents would prefer taking the LRT and the bus to/from campus. Less than 10% of the prefer

walking as long as the accommodation is suitable and walking distance takes less than 10 minutes. Others prefer driving, motorcycles or taking cabs.

- Would students be willing to stay at an area with large population?

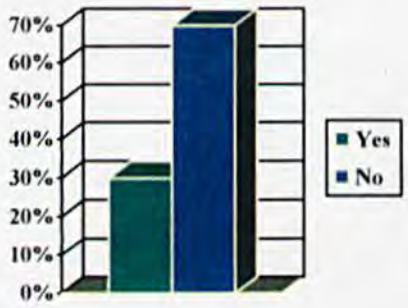


figure 6 Living in areas with large population

From the graph shown above, respondents who choose to live in an area with large population stated that the facilities in the area are more complete and safety is more certain since crimes are more likely to occur in dark and quiet places without many passerby. Those who say no prefer a more private and peaceful environment to enable them to study without any disruption.

- Do students prefer living inside or outside campus?

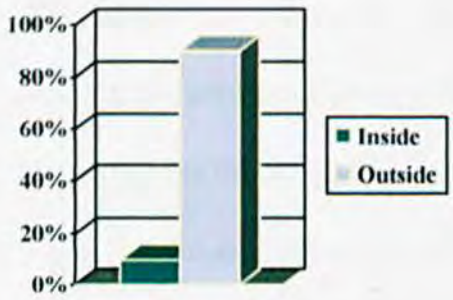


figure 7 Inside or outside campus?

From this survey, it shows that many of the respondents prefer living outside campus rather than inside.

The main reasons are:

1) More freedom

2) Not bound to any rules

3) Save budget

4) Learn to live independently

5) Easier to obtain transportation

Summary of the interview:

Students

- They stated that if there was a system that can help students to find updated, reliable and efficient information on accommodation places, they would be willing to use the Internet as the main source of finding accommodation.
- Those who would like to find occupants as housemates or roommates would be willing to try advertising in the Internet as long it would prove to be reliable and easy to use.
- From their knowledge, many students usually find accommodation from advertisements distributed or through friends. In their opinion, the Internet is not the main source for accommodation finders because of these reasons:
  - Reliability of the information in the Internet is not certain
  - Many students rarely use the Internet as most of them do not have the facility at home.
  - The accommodation places that are listed might not fulfill their needs- price, situation.

Below is the summary of the information obtained:

Landlords

- He stated that he would usually find occupants by placing advertisements in the newspaper or since he has already rented out to students before this, he would usually asked the previous tenants to search for students who are looking for accommodation to replace them at the end of the contract.

- Landlords do not mind renting out to students as long as they do not cause trouble to the landlord such as not taking good care of the facilities, paying the rent late and others. And since the demand for accommodation is much higher among students, it is much easier to find students as occupants.
- In his opinion, not many landlords prefer advertising in the Internet because it usually involves high costs.
- But they have stated that if advertising is free, advertising in the Internet would be a preferable choice. Other than that, landlords do not mind placing advertisements in the Internet as long as it is reliable and useful – possibility of finding occupants in a given time period is ensured.
- If advertising in the Internet involves cost, they would not mind placing an advertisement as long as it would not cost a lot more than other ways of distributing advertisements.

USER MANUAL

WARNING

USER MANUAL VERSION 1.0.0 IS CLASSIFIED AS PRIVATE AND CONFIDENTIAL. UNAUTHORIZED EXPOSED, COPIED, DISTRIBUTED OR ANY FORM OF UNAUTHORIZED ACTIONS PERFORMED ON THIS MANUAL, OR ANY PORTION OF IT, MAY RESULT IN SEVERE CIVIL AND CRIMINAL PENALTIES, AND WILL BE PROSECUTED TO THE MAXIMUM EXTENT POSSIBLE UNDER LAW

This user manual is used to guide users on how to use the system properly and well-understood. Over time, due to amendments or upgrades to the features and design of the system caused by additional user requirements and unpredictable situations, all information in this manual is subject to change without prior notice. Changes will be documented in the following versions and distributed to who may be concern as soon as possible. These additional documents will either consist of

i) Full replacement of the document or

ii) A partial update with each new page or replacement pages to be inserted throughout the whole document.

Documented by: Mona Sofiah @ Dewi Bte Abdul Kahar

User Guide

Introduction

There are three types of users who are involved in using the Web Based Accommodation Finder For Students system.

i) Accommodation finder (students)

ii) Landlords/occupant seeker

iii) System Administrator

To enhance the understanding for each user on how to use the system, this manual will be divided into three parts according to each type of user as stated above.

NOTES

1) All passwords are case-sensitive. Example, if user has registered with password 'myname', then once the user logs into the system, they must use the same password 'myname' and not 'Myname' or 'myNAME' , etc.
2) All advertisements expire in 1 month from the date of submit. The administrator must ensure that this is done at all times.

1.0 **HOME**

Page **Home** will be the first page that the user will see. In the frame there is a short description about the site. Users will be presented with five options. For accommodation finders who have already registered can just login into the system by clicking on the *Login* link and they will be directed to the **Login** page (1.5).

Only **UM students** are allowed to register in this system to search for accommodation. For those who have not yet registered can click on the link *Student Register.*

Users who are not UM students can advertise or click on the link *more info* and *Places of interest* to find out more information on accommodation out of campus area.

Landlords/Occupant seekers who wish to advertise can click on the link *advertise* and will be directed to that page immediately.

If the user encounters problems when using the system or would like information on Something, they can contact the System Administrator by sending an email when clicking on the link *webmaster@accommodation.um.edu.my.*

1.2 **More info**

Page **More info** provides more information on other places situated near to UM that offer students places to live which includes room renting. Some of these are organizations that offer students to rent rooms at their organization hostel.

1.3 **Places of interest**

Places of interest lets users view accommodation places which are popular among students. You would find that the majority of tenants residing in these places are students.

Accommodation Finder

1.4 REGISTER

Accommodation Finders can register by filling in their particulars in the form as shown above such as their student card number, Student identification card number, name, email address, home address, city, state, postcode and password. The password has to be entered for the second time to make sure the user has not mistyped their password and that they have typed the intended password.

All details **must** be filled in, if any field is left blank, the error message as below will appear when the user clicks on the *register* button. E.g., user does not enter student IC.

User must ensure that both passwords entered are similar. If the password entered is different from the password verified, the message below will appear once the user clicks on the *register* button.

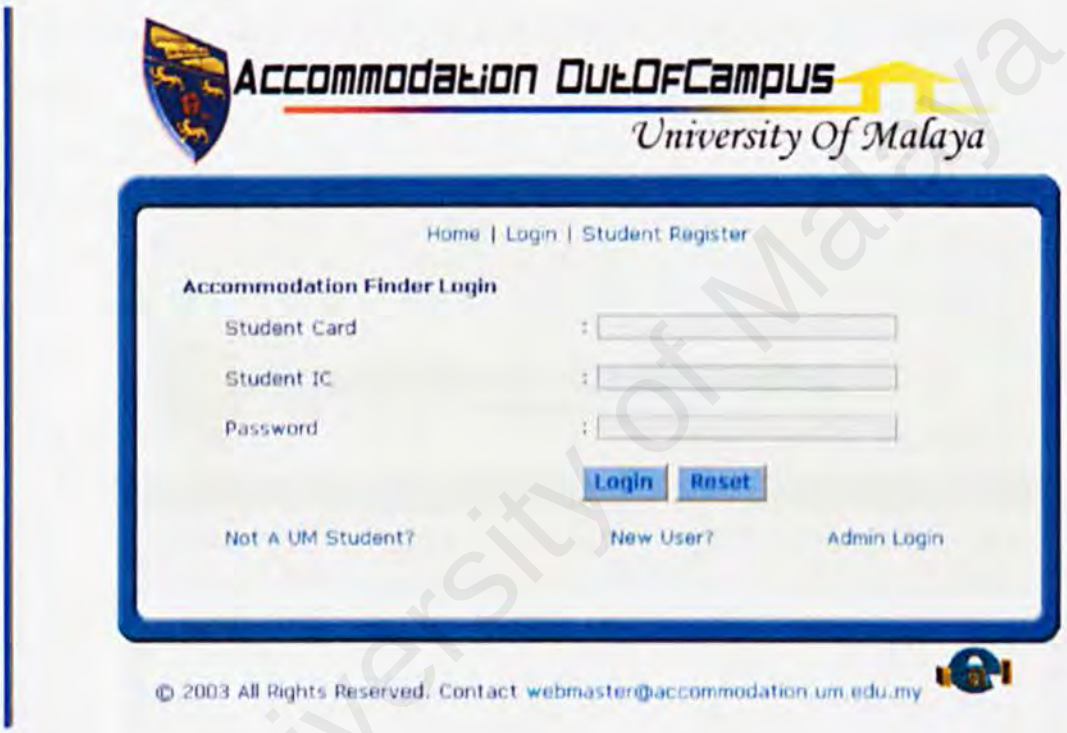
If the user is not a UM student, and still attempts to register, the system will automatically detect that the user is not a UM student when the user fills in the field Student card and Student IC and an error message will be displayed on the form as shown below.

The user is then required to contact the administrator if this problem arises by clicking on 'Accommodation Admin'.

If the user has no problem in submitting their particulars then the message below will appear

The user will then be directed to the **Login** page (1.5) when the *OK* button is clicked.

1.5 **LOGIN**



The user can enter their Student Card Number and Student IC Number as well their password to log on. They will then be directed to the **Registered Users** page (1.6) when they click on the *Login* button.

The link *Not A UM student?* will direct the user back to the **Home** page (1.0) while the link *New User?* are for users who have not registered yet. This will bring the users to the **Register** page (1.4) when clicked.

The link *Admin Login* is only for the use of the System Administrator and will be directed to the **Admin Login** page (1.12) when clicked.

If the user enters incorrect information, the message below will appear when clicking on the *Login* button.

If the user successfully logs on then they will be directed to the **Registered Users** page (1.6).

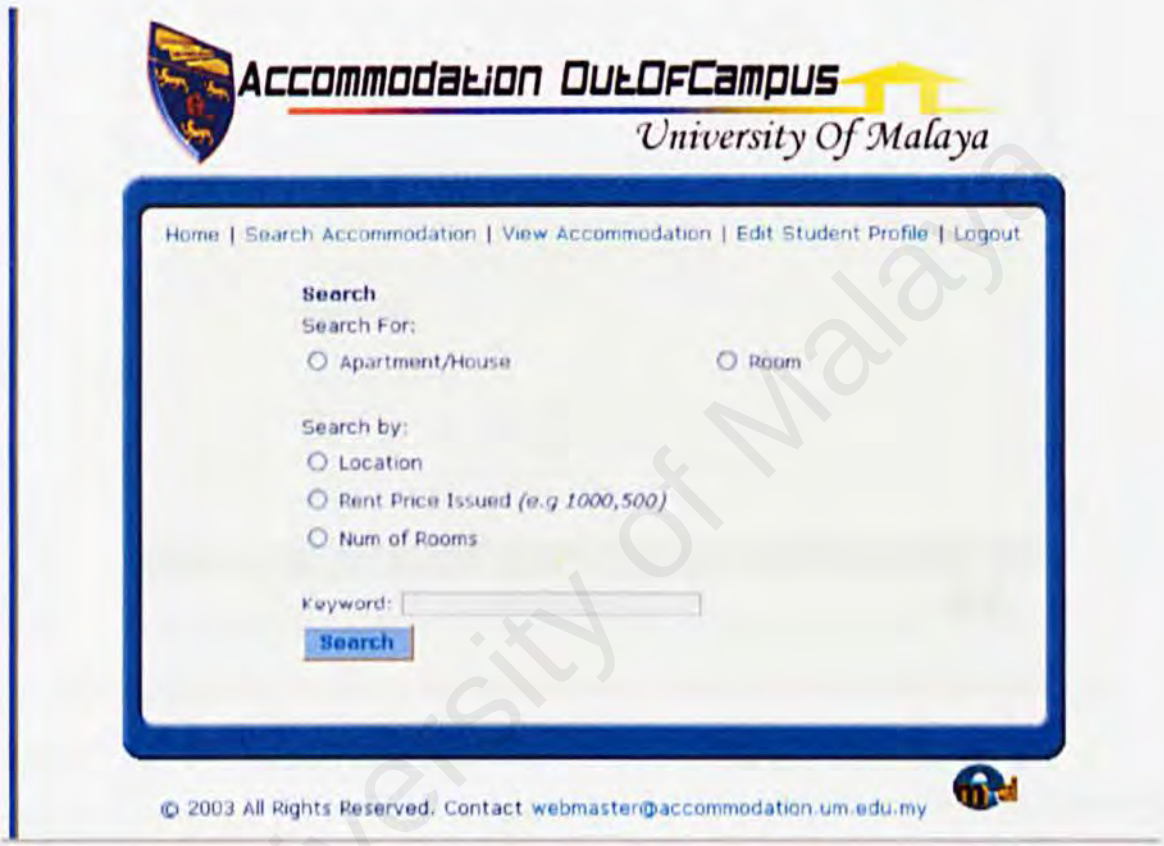
1.6 REGISTERED USERS

Users can search for accommodation by clicking on the *search for accommodation* or *Search Accommodation* link. They will be directed to the **Search** page (1.7). Users can also view all the accommodation advertisements by clicking on the *View Accommodation Advertisements* or *View Accommodation* link. The **View all** page (1.9) will be displayed.

Other than that, users can also edit their profile by clicking on the *Edit Student Profile* link. This will bring them to the **Edit Profile** page (1.10)

After the user has searched and viewed the advertisements, they can log out by clicking on the *Logout* link.

1.7 SEARCH

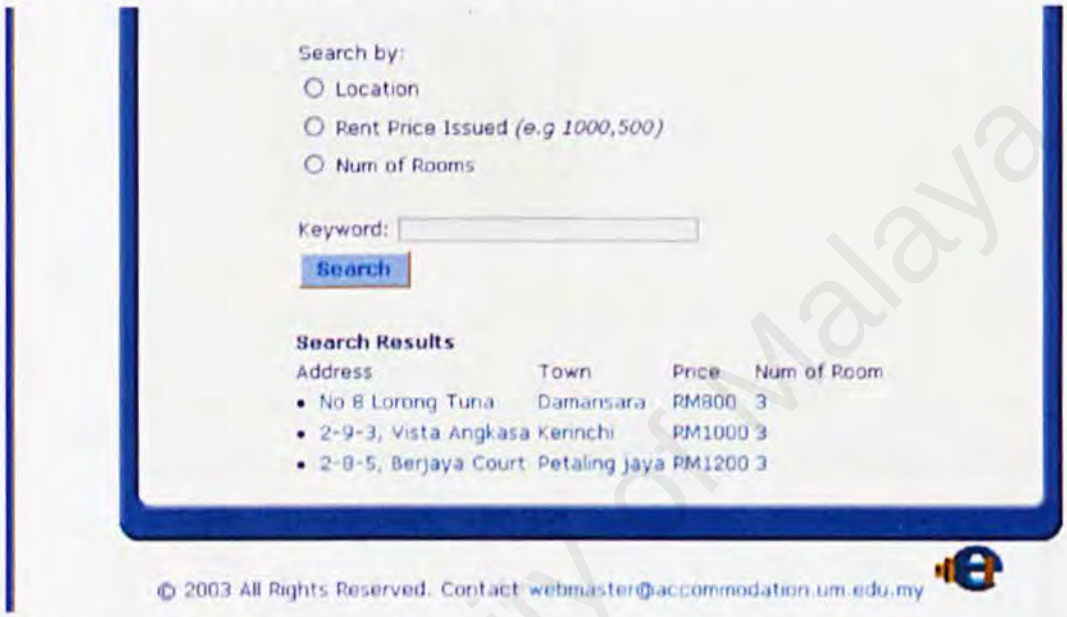


User's can have two options to search. They can either search for Apartment/House or Room but not both at once. Users can then search by location, rent price issued for the accommodation or number of rooms.

After the user has selected any category, they will be required to enter a keyword based on the category they have chosen. E.g., if the user has chosen House/Apartment and selected the Location then they must enter the keyword *Bangsar* or *P.J*, etc.

If the user does not enter a keyword then the message below will appear,

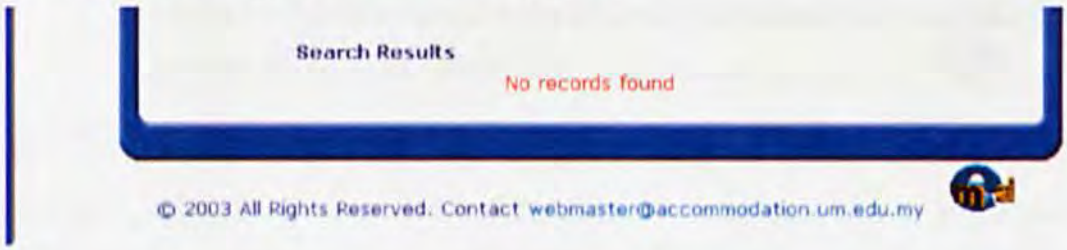
If the user has entered all details needed and clicks on the *Search* button, the search result will be displayed on the same page as below,



The search result based on the selected options as well as the keyword entered will display the address, town, price and number of rooms for the accommodation.

By clicking on any of the result, the user may view the advertisement for that particular accommodation in the **Advertisement** page (1.8).

If the system does not find a match for the selected options as well as the keyword entered, the message below will be displayed,



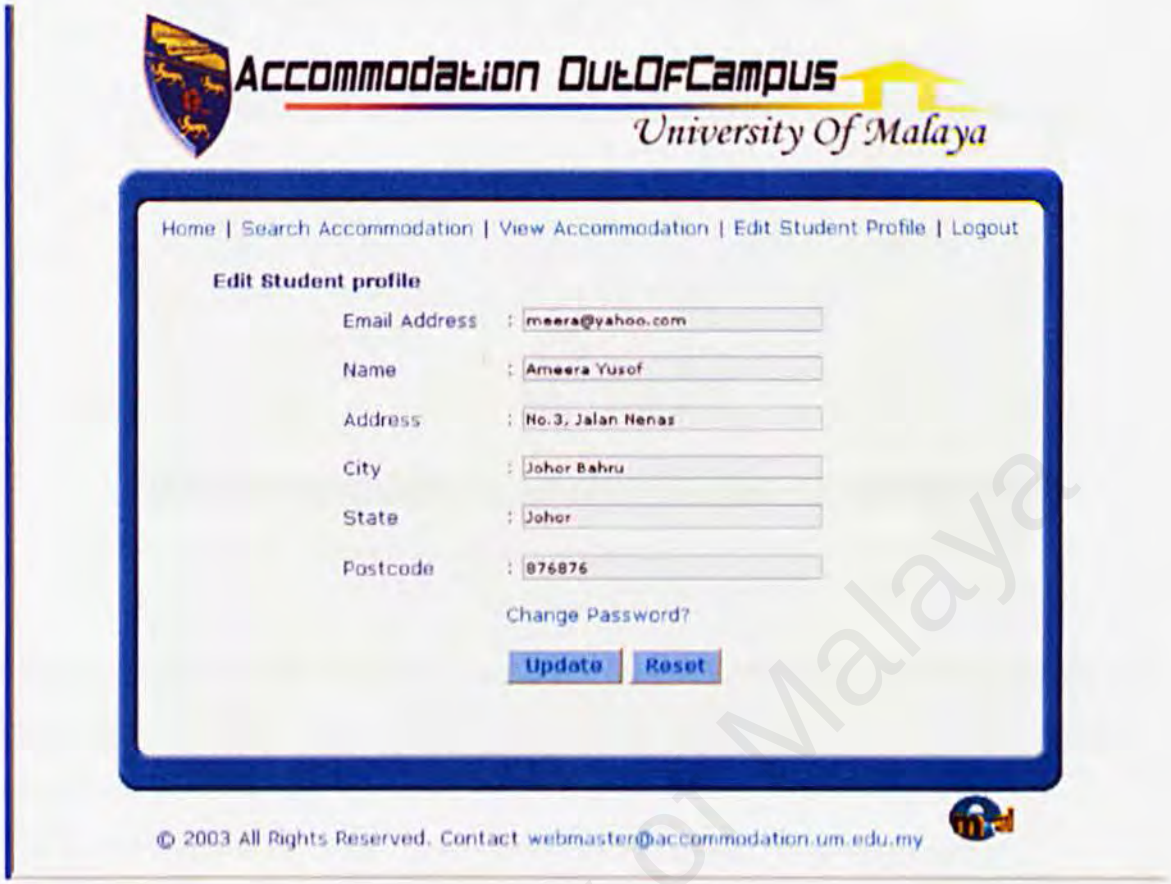
1.8 ADVERTISEMENT

All information on the accommodation entered by the advertisement owner will be displayed in the advertisement so that the user can make their choice. If the user wishes to contact the ad owner, they can just send en email by clicking on the *Send an e-mail to the ad owner* link. The *back* link will direct the users to the previous page.

1.9 VIEW ALL

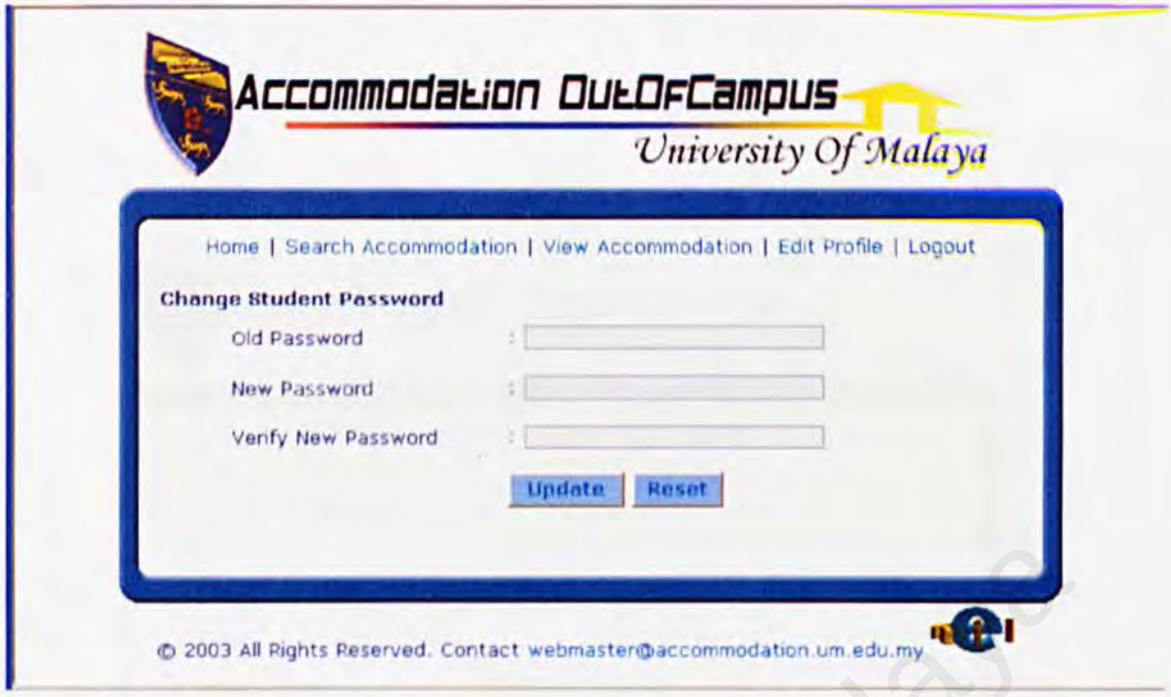
This page displays all the advertisements that are available and have been submitted. By clicking on any of the addresses, users can view the advertisement on that particular accommodation on the **Advertisement** page (1.8).

1.10 **EDIT PROFILE**



User's may change any information they wish to by just changing the information and clicking the *Update* button. The message below will appear when the button *Update* is clicked,

When the user wishes to change their password, they can just simply click on the *Change password?* link and the following form will appear,



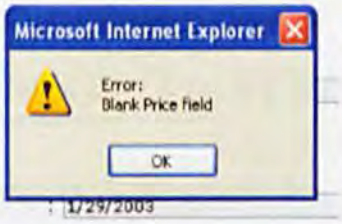
To change a password, the user has to enter their old password and then enter the new password. User's then verify their new password by entering it again in the 'Verify New Password' field.

When the user clicks on the *Update* button, the message below will appear,

Landlords/Occupent Seeker

1.11 ADVERTISE

User's must fill in all the information required except 'Telephone Number (2)' , 'Other Information' and 'Upload picture'. If any information is not filled in, an error message will appear. E.g., if a user does not enter the price issued,



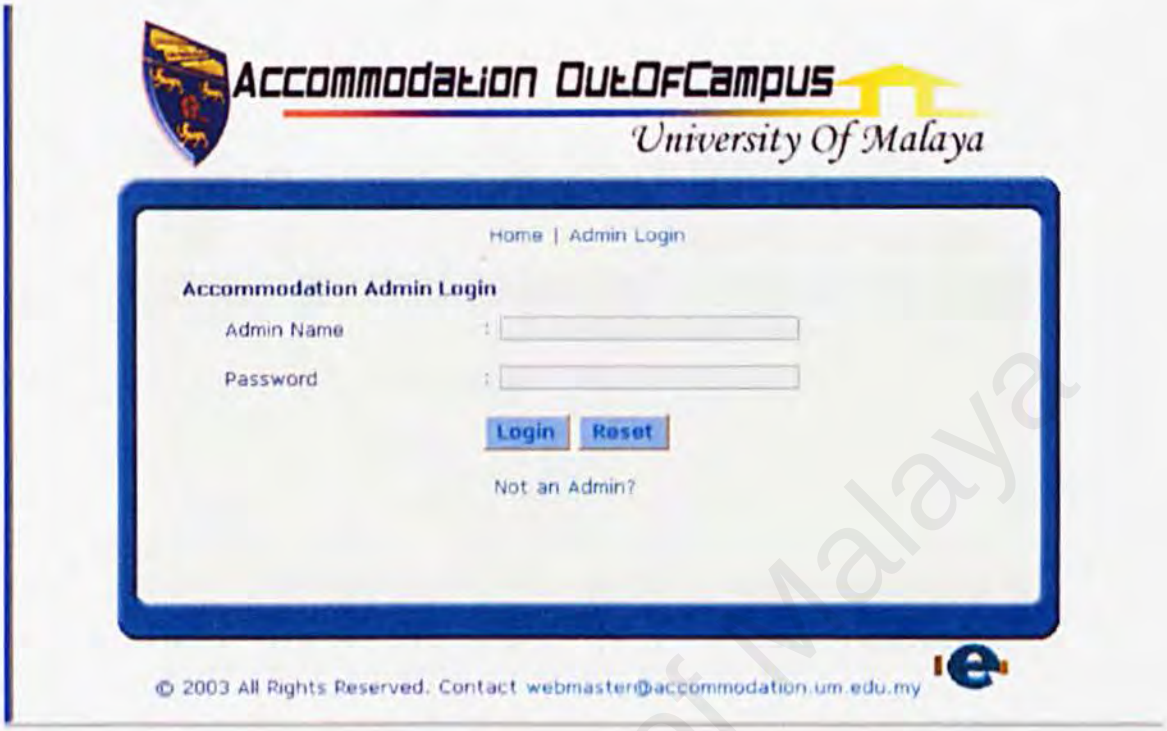
The user must also fill in the 'e-mail' field, if the user fails to do this then the message below will appear,

The user does not have to fill in the 'date' field because the system automatically generates the date based on the day the advertisement was submitted. Uploading picture of the accommodation is optional. If the user wants to upload a picture, they just have to click the *browse* button and find the file which contains the picture.

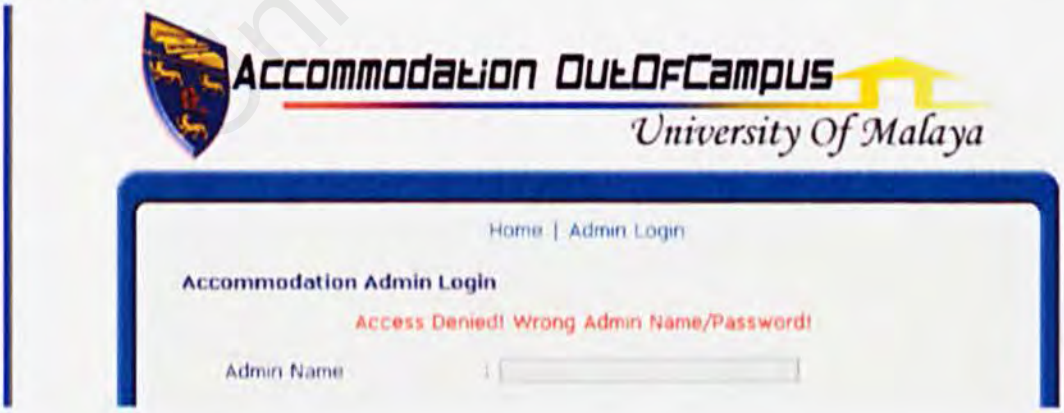
Users who wish to upload pictures must ensure that the picture size does not exceed 50 KB and the file name of the picture must be unique so that it is not similar to other picture files that already exist. If an error message does appear, users just have to resize the picture or change the file name.

After all the information is entered and there are no more changes done, the user can click on the *Submit Your Advertisement* button. If the advertisement is successfully submitted, the message below will appear,

1.12 ADMIN LOGIN

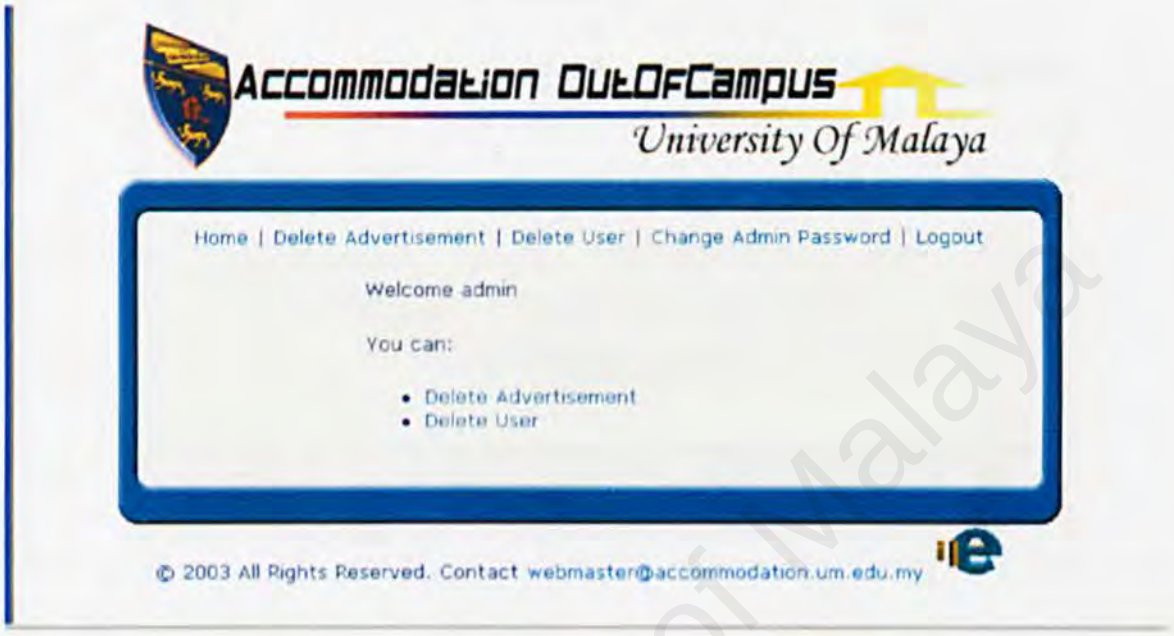


The administrator must enter their name and password to enable them to access the system. If the user is not an administrator then they cannot access the system. Therefore, clicking the *Not an Admin?* link will redirect them back to the **Home** page (1.0). If the administrator enters the incorrect Admin name or Password then the message below will appear,



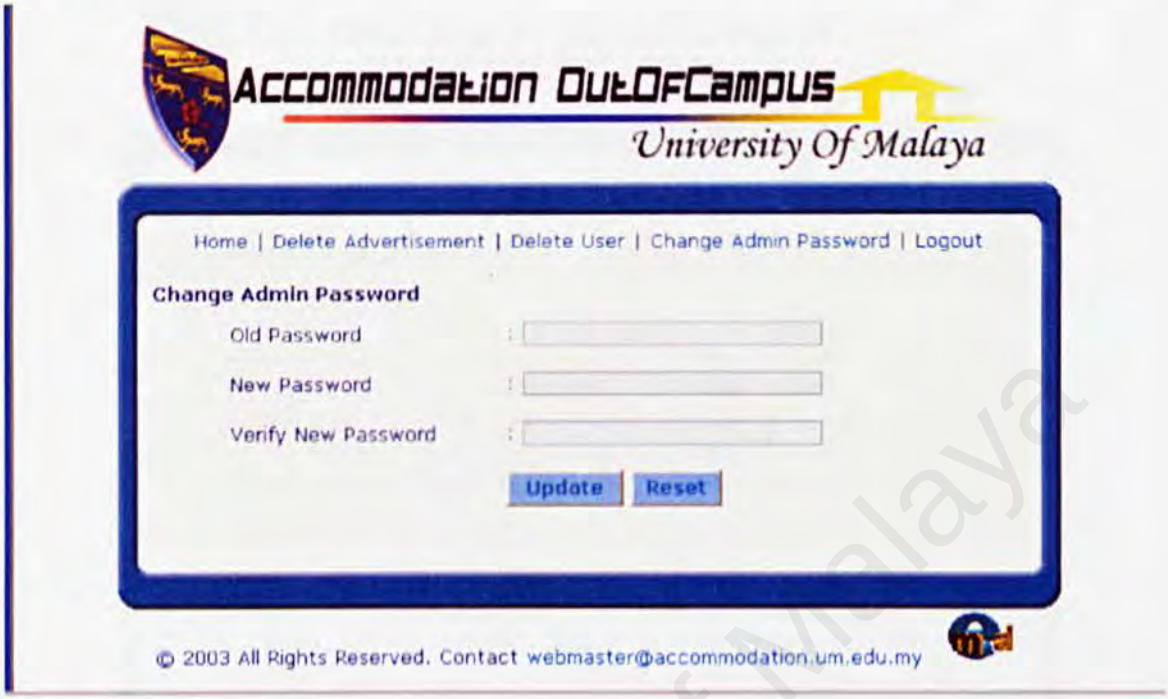
If the administrator has entered the correct Admin name and Password and click on the *Login* button, then they will be directed to the **ADMIN** page (1.13)

1.13 **ADMIN**



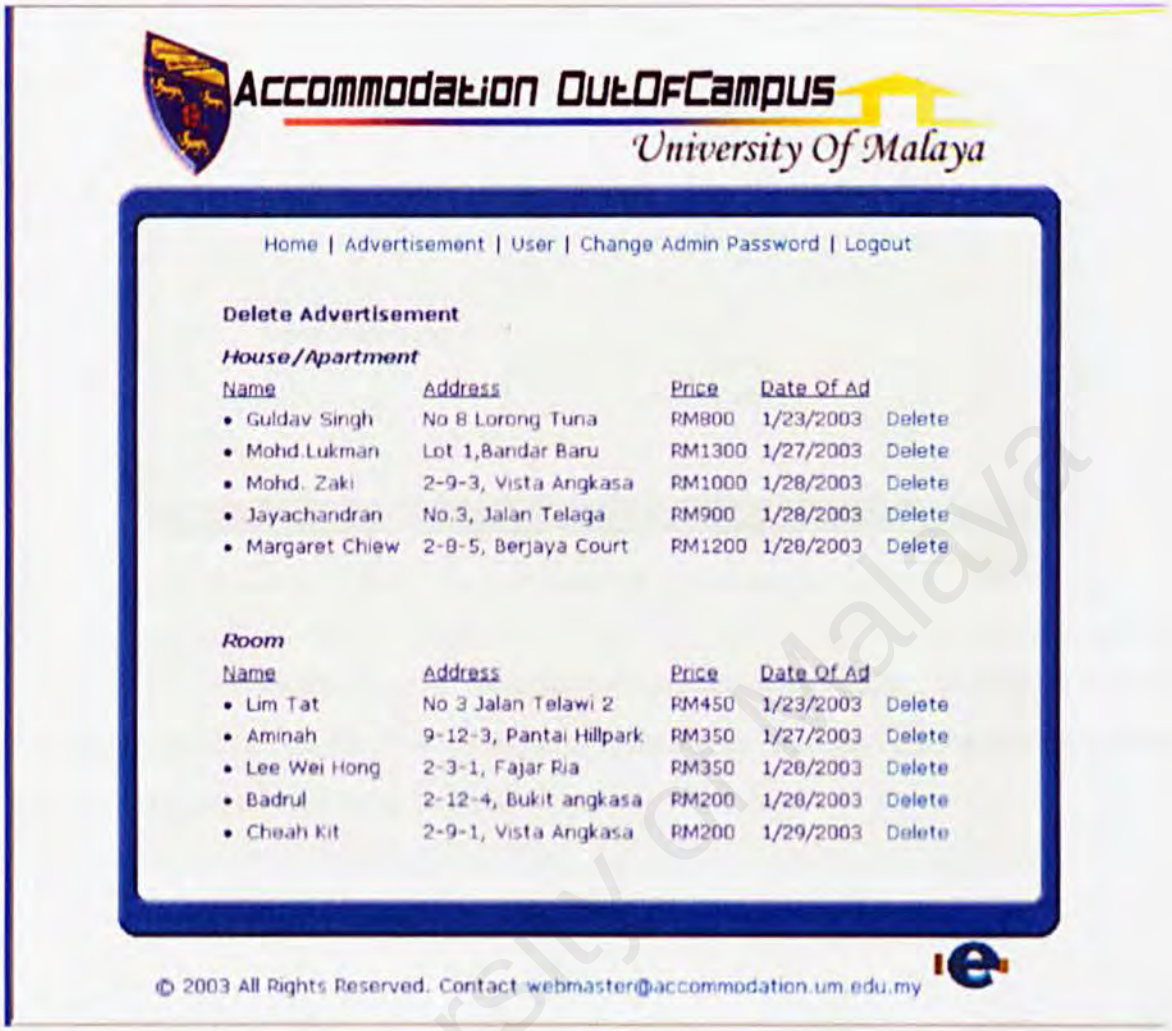
The administrator has the privilege to delete advertisements that are not valid, expired or on the request of the advertisement owner. By clicking on the *Delete Advertisement* link, the administrator will be directed to the **Delete Advertisement** page (1.15).
The administrator also has the privilege to delete users by just clicking on the *Delete User* link. This will open the **Delete User** page (1.16).

The administrator can also change their password by clicking on the *Change Admin Password* link. The form below will be displayed once the administrator clicks on this link.



Like the form *Change Student Password,* administrators also must enter their old password and then enter their new password. The administrator must verify the new password by entering it again in the 'Verify New Password' field.

1.15 **DELETE ADVERTISEMENT**



All the advertisements are displayed in this page along with the date the advertisement was submitted. To delete an advertisement, the administrator clicks on the *Delete* link beside each advertisement. This process **cannot** be undone and the data lost cannot be recovered.

1.16 **DELETE USER**

The student Card Number and IC Number is displayed in this page. To delete a user, the administrator clicks on the *Delete* link beside each user. This process **cannot** be undone and the data lost cannot be recovered.

SOURCE CODES

Login

```
<!--#include file="dbconnections.asp" -->
<%
stuCard = Request.Form("stuCard")
stuIC = Request.Form("stuIC")
password = Request.Form("password")

if stuCard <> "" AND stuIC <> "" AND password <> "" then
Set conn = Server.CreateObject("ADODB.Connection")
conn.Open(db_string)
Set rs = conn.execute("select * from student where student_card ='"&stuCard&"' AND
student_ic ='"&stuIC&"' AND password ='"&password&"'")
        if not rs.eof then
                session("stuCard") = stuCard
                Response.Redirect("enter.asp")
        else
                ralat = "ya"
        end if
end if
%>
<body>
<table width="590" border="0" align="center" cellpadding="0" cellspacing="0">
 <tr>
  <td><img src="images/banner.gif" width="590" height="104"></td>
 </tr>
 <tr>
  <td><table width="590" border="0" cellspacing="0" cellpadding="0">
     <tr>
      <td width="20"><img src="images/top_left.gif" width="20" height="31"></td>
      <td background="images/top.gif"> </td>
      <td width="20"><img src="images/top_right.gif" width="20" height="31"></td>
     </tr>
     <tr>
      <td background="images/left.gif"> </td>
      <td valign="top" bgcolor="#FFFBF7">
<p align="center"><a href="index.asp">Home</a> | <a href="login.asp">Login</a>
        | <a href="register.asp">Register</a></p>
                        <table width="590" border="0" cellspacing="0"
cellpadding="0">
          <tr>
           <td width="235"><div align="right">Accommodation Finder
Login</div></td>
           <td width="352"> </td>
           <td width="3"> </td>
```

```
        </tr>
        <tr>
          <td colspan="2"><form name="form1" method="post" action="login.asp">
            <table width="500" border="0" align="center" cellpadding="5"
cellspacing="5">
                                        <%if ralat = "ya" then%>
                                          <tr>
              <td colspan="3"><div align="center" class="redfont">Access
                Denied! Wrong Password!</div></td>
            </tr>
                                        <%end if%>
            <tr>
              <td width="123">Student Card</td>
              <td colspan="2">:
                <input name="stuCard" type="text" class="formsearch" id="stuCard"
size="20"></td>
            </tr>
            <tr>
              <td>Student IC</td>
              <td colspan="2">:
                <input name="stuIC" type="text" class="formsearch" id="stuIC"
size="20"></td>
            </tr>
            <tr>
              <td>Password</td>
              <td colspan="2">:
                <input name="password" type="password" class="formsearch"
id="password" size="20"></td>
            </tr>
            <tr>
              <td> </td>
              <td colspan="2"><input name="Submit" type="button" class="button"
value="Login" onclick= "update(this.form)">
                <input name="Submit2" type="reset" class="button"
value="Reset"></td>
            </tr>
            <tr>
              <td><a href="index.asp">Not a UM student?</a></td>
              <td width="109"><div align="center"><a href="register.asp">New
                User?</a></div></td>
              <td width="118"><div align="right"><a href="adminlogin.asp">Admin
                Login</a></div></td>
            </tr>
          </table>
        </form></td>
        <td> </td>
      </tr>
```

```
        </table>
         </td>
        <td background="images/right.gif"> </td>
      </tr>
      <tr>
        <td><img src="images/down_left.gif" width="20" height="41"></td>
        <td background="images/down.gif"> </td>
        <td><img src="images/down_right.gif" width="20" height="41"></td>
      </tr>
    </table></td>
  </tr>
</table>

</body>
</html>
```

Register

```
<!--#include file="dbconnection.asp" -->
<%
if Request("emailadd") <> "" then
        Set conn = Server.CreateObject("ADODB.Connection")
        conn.Open(db_string)
        Set rs = conn.execute("select * from student where student_card
='"&Request("stuCard&")&"' AND student_ic ='"&Request("stuIC")&"'")
        if rs.EOF then
        conn.execute("insert into student
(email_address,student_card,student_ic,name,address,city,state,postcode,password)
values
('"&Request("emailadd")&"','"&Request("stuCard")&"','"&Request("stuIC")&"','"&Req
uest("name")&"','"&Request("address")&"','"&Request("city")&"','"&Request("state")&
"','"&Request("postcode")&"','"&Request("password")&"')")
        session("newregister") = "yes"
        Response.Redirect("login.asp")
        end if
end if
%>

<body>
<table width="590" border="0" align="center" cellpadding="0" cellspacing="0">
 <tr>
  <td><img src="images/banner.gif" width="590" height="104"></td>
 </tr>
 <tr>
  <td><table width="590" border="0" cellspacing="0" cellpadding="0">
    <tr>
     <td width="20"><img src="images/top_left.gif" width="20" height="31"></td>
     <td background="images/top.gif"> </td>
     <td width="20"><img src="images/top_right.gif" width="20" height="31"></td>
    </tr>
    <tr>
     <td background="images/left.gif"> </td>
     <td valign="top" bgcolor="#FFFBF7">
<p align="center"><a href="index.asp">Home</a> | <a href="login.asp">Login</a> |
<a href="register.asp">Register</a></p>
        <table width="590" border="0" cellspacing="0" cellpadding="0">
         <tr>
          <td width="235"><div align="right">New User Registration</div></td>
          <td width="352"> </td>
          <td width="3"> </td>
         </tr>
         <tr>
          <td colspan="2"><form name="form1" method="post" action="register.asp">
```

```
            <table width="350" border="0" align="center" cellpadding="5"
cellspacing="5">
              <tr>
                <td>Student Card</td>
                <td>:
                  <input name="stuCard" type="text" class="formsearch" id="stuCard"
size="20"></td>
              </tr>
              <tr>
                <td>Student IC</td>
                <td>:
                  <input name="stuIC" type="text" class="formsearch" id="stuIC"
size="20"></td>
              </tr>
              <tr>
                <td>Name</td>
                <td>:
                  <input name="name" type="text" class="formsearch" id="name"
size="20"></td>
              </tr>
              <tr>
                <td>Address</td>
                <td>:
                  <input name="address" type="text" class="formsearch" id="address"
size="20"></td>
              </tr>
              <tr>
                <td>City</td>
                <td>:
                  <input name="city" type="text" class="formsearch" id="city"
size="20"></td>
              </tr>
              <tr>
                <td>State</td>
                <td>:
                  <input name="state" type="text" class="formsearch" id="state"
size="20"></td>
              </tr>
              <tr>
                <td>Postcode</td>
                <td>:
                  <input name="postcode" type="text" class="formsearch" id="postcode"
size="20"></td>
              </tr>
              <tr>
                <td width="146">Email Address</td>
                <td width="254">:
```

```
                    <input name="emailadd" type="text" class="formsearch" id="emailadd"
size="20"></td>
                  </tr>
                  <tr>
                    <td>Password</td>
                    <td>:
                      <input name="password" type="password" class="formsearch"
id="password" size="20"></td>
                  </tr>
                  <tr>
                    <td>Verify password</td>
                    <td>:
                      <input name="password2" type="password" class="formsearch"
id="password2" size="20"></td>
                  </tr>
                  <tr>
                    <td> </td>
                    <td><input name="Submit" type="submit" class="button"
value="Register" onclick="return verifycomb()">
                      <input name="Submit2" type="reset" class="button"
value="Reset"></td>
                  </tr>
                </table>
              </form></td>
            <td> </td>
          </tr>
        </table>
        </td>
      <td background="images/right.gif"> </td>
    </tr>
    <tr>
      <td><img src="images/down_left.gif" width="20" height="41"></td>
      <td background="images/down.gif"> </td>
      <td><img src="images/down_right.gif" width="20" height="41"></td>
    </tr>
  </table></td>
 </tr>
</table>

</body>
</html>
```

Advertise

```
<!--#include file="dbconnections.asp" -->
<%
uploads_folder = "db\pictures"
if Request("upload")= "yes" then
        if request.totalbytes > 53000 then
        msg = "<p align=center>Error:Picture size " & request.totalbytes &"b exceed
maximum 50Kb</p>"
        else
        bdata = request.binaryread(request.totalbytes)
        data = ""
        for i = 1 to lenb(bdata)
   data = data & chr(ascb(midb(bdata, i, 1)))
        next
        delimiter = vbnewline & mid(data, 1, instr(data, vbnewline) + 1)
        eorequest = replace(delimiter, vbnewline, "--", 2)
        bo2ndline = instr(data, vbnewline) + 2
        eon_1thline = instrrev(data, eorequest) - 1
        lodata = eon_1thline - bo2ndline
        data = mid(data, bo2ndline, lodata)
        data = split(data, delimiter)
        for i = 0 to ubound(data)
   data(i) = split(data(i), vbnewline & vbnewline)
   dataitemisfile = false
        fnametoken = instr(data(i)(0), "filename=")
   if ((fnametoken <> 0) and (len(trim(data(i)(1))) <> 0)) then
   eofname = instr(fnametoken, data(i)(0), vbnewline) - 1
   bofname = instrrev(data(i)(0), "\", eofname) + 1
   lofname = eofname - bofname
   fname  = mid(data(i)(0), bofname, lofname)
   jenis = LCase(Mid(fname, InStrRev(fname, ".", -1, 1) + 1))
   if jenis = "gif" OR jenis = "jpg" OR jenis = "jpeg" OR jenis = "bmp" then
        Dim con
        Dim rs
        Set con = Server.CreateObject("ADODB.Connection")
        con.Open(db_string)
        set rs = con.execute("select * from imagedir where imagedir ='"&fname&"'")
        if rs.EOF then
        path = server.mappath(uploads_folder & "\" & fname)
    set fso = server.createobject("scripting.filesystemobject")
    set file = fso.CreateTextFile(path, true)
    file.write data(i)(1)
    file.close
    set file = nothing
    set fso = nothing
   lalu ="ye"
```

```
        con.execute("insert into advertise
(name,phone1,phone2,email,type,address,postcode,town,otherinfo,price,status,vdate)
values
('"&data(0)(1)&"','"&data(1)(1)&"','"&data(2)(1)&"','"&data(3)(1)&"','"&data(4)(1)&"','
"&data(5)(1)&"','"&data(6)(1)&"','"&data(7)(1)&"','"&data(11)(1)&"','"&data(12)(1)&"','
"&data(13)(1)&"','"&data(14)(1)&"')")
        set rs2 = con.execute("select * from advertise where address='"&data(5)(1)&"'")
        con.execute("insert into imagedir (advertiseID,imagedir) values
('"&rs2("advertiseID")&"','"&fname&"')")
        if data(4)(1) = "house" then
        con.execute("insert into house (advertiseID,numroom,numfloor,numbath) values
("&rs2("advertiseID")&",'"&data(8)(1)&"','"&data(9)(1)&"','"&data(10)(1)&"')")
        end if
        msg = "ok"
        else
        msg = "<p align=center>Error!Similar picture name in database.Please change
it.</p>"
        end if
        else
        end if

        data(i)(1) = fname
   dataitemisfile = true
        end if
        boname = instr(data(i)(0), """") + 1
   loname = instr(boname, data(i)(0), """") - boname
   data(i)(0) = mid(data(i)(0), boname, loname)



next

if lalu <> "ye" then
        Set con = Server.CreateObject("ADODB.Connection")
        con.Open(db_string)
        con.execute("insert into advertise
(name,phone1,phone2,email,type,address,postcode,town,otherinfo,price,status,vdate)
values
('"&data(0)(1)&"','"&data(1)(1)&"','"&data(2)(1)&"','"&data(3)(1)&"','"&data(4)(1)&"','
"&data(5)(1)&"','"&data(6)(1)&"','"&data(7)(1)&"','"&data(11)(1)&"','"&data(12)(1)&"','
"&data(13)(1)&"','"&data(14)(1)&"')")
        set rs2 = con.execute("select * from advertise where address='"&data(5)(1)&"'")
        if data(4)(1) = "house" then
        con.execute("insert into house (advertiseID,numroom,numfloor,numbath) values
("&rs2("advertiseID")&",'"&data(8)(1)&"','"&data(9)(1)&"','"&data(10)(1)&"')")
        end if
        msg = "ok"
```

```
        end if

end if
end if
%>
<body>
<table width="590" border="0" align="center" cellpadding="0" cellspacing="0">
 <tr>
  <td><img src="images/banner.gif" width="590" height="104"></td>
 </tr>
 <tr>
  <td><table width="590" border="0" cellspacing="0" cellpadding="0">
    <tr>
     <td width="20"><img src="images/top_left.gif" width="20" height="31"></td>
     <td background="images/top.gif"> </td>
     <td width="20"><img src="images/top_right.gif" width="20" height="31"></td>
    </tr>
    <tr>
     <td background="images/left.gif"> </td>
     <td valign="top" bgcolor="#FFFBF7">
<p align="center"><a href="index.asp">Home</a> | <a
href="advertise.asp">Advertise</a>
        | <a href="login.asp">Student Login</a> | <a href="register.asp">Student
Register</a></p>
      <table width="590" border="0" cellspacing="0" cellpadding="0">
       <tr>
        <td width="189"><div align="right">New Advertisement</div></td>
        <td width="398"> </td>
        <td width="3"> </td>
       </tr>
       <tr>
        <td colspan="2"><form action="advertise.asp?upload=yes" method="post"
enctype="multipart/form-data"  name="form1" onsubmit="return validate(this)" >
          <table width="500" border="0" align="center" cellpadding="5"
cellspacing="5">
           <tr>
            <td colspan="2"><div align="center"
class="redfont"><%=msg%></div></td>
           </tr>
           <tr>
            <td colspan="2"><strong><u>Contact Information</u></strong></td>
           </tr>
           <tr>
            <td width="147">Name</td>
            <td width="259">:
             <input name="name" type="text" class="formsearch" id="name"
size="20"></td>
```

```
                </tr>
                <tr>
                  <td>Telephone Number(1)</td>
                  <td>:
                    <input name="phone1" type="text" class="formsearch" id="phone1"
size="20"></td>
                </tr>
                <tr>
                  <td>Telephone Number(2)</td>
                  <td>:
                    <input name="phone2" type="text" class="formsearch" id="phone2"
size="20"></td>
                </tr>
                <tr>
                  <td>Email Address</td>
                  <td>:
                    <input name="email" type="text" class="formsearch" id="email"
size="20"></td>
                </tr>
                <tr>
                  <td><input name="jenis" type="radio" onclick="handleClick('show it')"
value="house" checked>
                    Apartment/House </td>
                  <td><input name="jenis" type="radio" onclick="handleClick('hide it')"
value="room">
                    Room</td>
                </tr>
                <tr>
                  <td colspan="2"><strong><u>Accommodation
Information</u></strong></td>
                </tr>
                <tr>
                  <td>Address</td>
                  <td>:
                    <input name="address" type="text" class="formsearch" id="address"
size="20"></td>
                </tr>
                <tr>
                  <td>Postcode</td>
                  <td>:
                    <input name="postcode" type="text" class="formsearch" id="postcode"
size="20"></td>
                </tr>
                <tr>
                  <td>Town</td>
                  <td>:
                    <select name="city" class="formsearch" id="city">
```

```
                    <option value="Bangsar">Bangsar</option>
                    <option value="Damansara">Damansara</option>
                    <option value="Pantai Dalam">Pantai Dalam</option>
                    <option value="Kerinchi">Kerinchi</option>
                    <option value="Shah Alam">Shah Alam</option>
                   </select></td>
                 </tr>
                 <tr id="boxthing">
                  <td colspan="2" ><p><strong><u>Accommodation Features (For
                    Apartment/House)</u></strong></p>
                   <table width="420" border="0" cellpadding="5">
                    <tr>
                     <td width="147">Number of rooms</td>
                     <td width="247">:
                      <input name="numroom" type="text" class="formsearch"
id="numroom2" size="20"></td>
                    </tr>
                    <tr>
                     <td>Number of floors</td>
                     <td>:
                      <input name="numfloor" type="text" class="formsearch"
id="numfloor" size="20"></td>
                    </tr>
                    <tr>
                     <td>Number of bathrooms</td>
                     <td>:
                      <input name="numbath" type="text" class="formsearch"
id="numbath" size="20"></td>
                    </tr>
                   </table></td>
                 </tr>
                 <tr>
                  <td><strong><u>Other Information</u></strong></td>
                  <td> </td>
                 </tr>
                 <tr>
                  <td colspan="2">
                  <textarea name="otherinfo" rows="5" class="formsearch" id="otherinfo"
cols="20"></textarea></td>
                 </tr>
                 <tr>
                  <td><strong><u>Rent Payment</u></strong></td>
                  <td> </td>
                 </tr>
                 <tr>
                  <td>Price Issued</td>
                  <td>:
```

```
                <input name="price" type="text" class="formsearch" id="price"
size="20"></td>
              </tr>
              <tr>
                <td><input type="radio" name="status" value="negotiable">
                  Negotiable</td>
                <td><input type="radio" name="status" value="notnegotiable">
                  Not Negotiable</td>
              </tr>
              <tr>
                <td>Date</td>
                <td>:
                  <input name="vdate" type="text" class="formsearch" id="vdate"
value="<%=Date()%>" size="20"></td>
              </tr>
              <tr>
                <td>Upload picture(Optional)</td>
                <td>:
                <input name="file" type="file" class="formsearch" size="20"></td>
              </tr>
              <tr>
                <td colspan="2"> <input name="Submit" type="submit" class="button"
value="SUBMIT YOUR ADVERTISEMENT">
                  <input name="Submit2" type="button" class="button"
value="CANCEL" onclick="javascript:history.back()">
                </td>
              </tr>
            </table>
          </form></td>
          <td> </td>
        </tr>
      </table>
      </td>
    <td background="images/right.gif"> </td>
  </tr>
  <tr>
    <td><img src="images/down_left.gif" width="20" height="41"></td>
    <td background="images/down.gif"> </td>
    <td><img src="images/down_right.gif" width="20" height="41"></td>
  </tr>
 </table></td>
</tr>
</table>
</body>
</html>
<!--#include file="footer.asp" -->
```